

FIG. 1A. DNA SEQUENCE OF HIGH MOLECULAR WEIGHT PROTEIN

I (HMW1)

1 ACAGCGTTCT CTTAATACTA GTACAAACCC ACAATAAAAT ATGACAAACA
51 ACAATTACAA CACCTTTTTT GCAGTCTATA TGCAAAATATT TTAAAAAATA
101 GTATAAATCC GCCATATAAA ATGGTATAAT CTTTCATCTT TCATCTTTCA
151 TCTTTCATCT TTTCATCTTTC ATCTTTCATC TTTCATCTTT CATCTTTCAT
201 CTTTCATCTT TCATCTTTTCA TCTTTCATCT TTTCATCTTTC ACATGCCCTG
251 ATGAACCGAG GGAAGGAGG GAGGGCAAG AATGAAGAGG GAGCTGAACG
301 AACGCAAAATG ATAAAGTAAT TTAATTGTTT AACTAACCTT AGGAGAAAAAT
351 ATGAACAAGC TATATCGTCT CAAATTCAGC AAACGCCCTGA ATGCTTTGGT
401 TGCTGTGTCT GAATTGGCAC GGGGTGTGA CCATTCCACA GAAAAAGGCA
451 GCGAAAAACC TGCTCGCATG AAAGTGGTC ACTTAGCGTT AAAGCCACTT
501 TCCGCTATGT TACTATCTTT AGGTGTAACA TCTATTCCAC AATCTGTTTT
551 AGCAAGCGGC TTACAAGGAA TGGATGTAGT ACACGGCACA GCCACTATGC
601 AAGTAGATGG TAATAAAACC ATTATCCGCA ACAGTGTGTA CGATATCATT
651 AATTGGAAC AATTTAACAT CGACCAAAAT GAAATGGTGC AGTTTITACA
701 AGAAAAACAAC AACTCCGCCG TATCAACCG TGTACATCT AACCAAAATCT

FIG. 1B.

751	CCCAATTAAA	AGGGATTTTA	GATCTAACG	GACAAGTCTT	TTTAATCAAC
801	CCAAATGGTA	TCACAATAGG	TAAAGACGCA	ATTATTAACA	CTAATGGCTT
851	TACGGCTTCT	ACGCTAGACA	TTTCTAACGA	AAACATCAAG	GCGCGTAATT
901	TCACCTTCGA	GCAAACCAAA	GATAAAGCGC	TCGCTGAAAT	TGTGAATCAC
951	GGTTTAATTA	CTGTCCGTAA	AGACGGCAGT	GTAAATCTTA	TTGGTGGCAA
1001	AGTGAAAAAC	GAGGTTGTGA	TTAGCGTAAA	TGGTGGCAGC	ATTTCTTTAC
1051	TCGCAGGGCA	AAAAATCACC	ATCAGCGATA	TAAATAAACCC	AACCATTACT
1101	TACAGCATTG	CCGCGCCTGA	AAATGAAGCG	GTCAATCTGG	GCGATATTTT
1151	TGCCAAAGGC	GGTAACATTA	ATGTCCCCTGC	TGCCACTATT	CGAAACCAAG
1201	GTAAACTTTC	TGCTGATTCT	GTAAGCAAAG	ATAAAAAGCGG	CAATATTGTT
1251	CTTTCCGCCA	AAGAGGGTGA	AGCGGAAATT	GCGGGTGTA	TTTCCGCTCA
1301	AAATCAGCAA	GCTAAAGGCG	GCAAGCTGAT	GATTACAGGC	GATAAAGTCA
1351	CATTAAAAAC	AGGTGCAGTT	ATCGACCTTT	CAGGTAAAGA	AGGGGAGAA
1401	ACTTACCCTG	GCGGTGACGA	GCGCGCGGAA	GGTAAAAAGG	GCATTCAATT
1451	AGCAAAAGAA	ACCTCTTTAG	AAAAAGGCTC	AACCATCAAT	GTATCAGGCA
1501	AAGAAAAAGG	CGGACGCGCT	ATTGTGTGGG	GCGATATTGC	GTTAATTGAC

FIG. 1C.

1551 GGCAATATTA ACGCTCAAGG TAGTGGTGAT ATCGCTAAAA CCGGTGGTTT
 1601 TGTGGAGACG TCGGGGCATG ATTTATTTCAT CAAAGACAAT GCAATTGTTG
 1651 ACGCCAAAAG GTGGTTGTTA GACCCGGATA ATGTATCTAT TAATGCAGAA
 1701 ACAGCAGGAC GCAGCAATAC TTCAGAAGAC GATGAATACA CGGGATCCGG
 1751 GAATAGTGCC AGCACCCCAA AACGAAACAA AGAAAAGACA ACATTAAACAA
 1801 ACACAACCTCT TGAGAGTATA CTAAAAAAG GTACCTTTGT TAACATCACT
 1851 GCTAATCAAC GCATCTATGT CAATAGCTCC ATTAATTAT CCAATGGCAG
 1901 CTTAACTCTT TGGAGTGAGG GTCGGAGCGG TGGCGGCGTT GAGATTAAACA
 1951 ACGATATTAC CACCGGTGAT GATACCAGAG GTGCAAACTT AACAAATTAC
 2001 TCAGGCGGCT GGGTTGATGT TCATAAAAAAT ATCTCACTCG GGGCGCAAGG
 2051 TAACATAAAC ATTACAGCTA AACAAAGATAT CGCCTTTGAG AAAGGAAGCA
 2101 ACCAAGTCAT TACAGGTCAA GGGACTATTA CCTCAGGCAA TCAAAAAGGT
 2151 TTTAGATTTA ATAATGTCTC TCTAAACGGC ACTGGCAGCG GACTGCAATT
 2201 CACCACTAAA AGAACCAATA AATACGCTAT CACAAATAAA TTTGAAGGGA
 2251 CTTTAAATAT TTCAGGGAAA GTGAACATCT CAATGGTTTT ACCTAAAAAT
 2301 GAAAGTGGAT ATGATAAATT CAAAGGACGC ACTTACTGGA ATTTAACCTC

FIG. 1D.

2351	CTTAAATGTT	TCCGAGAGTG	GCGAGTTTAA	CCTCACTATT	GACTCCAGAG
2401	GAAGCGATAG	TGCAGGCACA	CTTACCCAGC	CTTATAATTT	AAACGGTATA
2451	TCATTCAACA	AAGACACTAC	CTTTAATGTT	GAACGAAATG	CAAGAGTCAA
2501	CTTTGACATC	AAGGCACCAA	TAGGGATAAA	TAAAGTATTCT	AGTTTGAAAT
2551	ACGCATCATT	TAATGGAAC	ATTTCAGTTT	CGGGAGGGGG	GAGTGTTGAT
2601	TTCACACTTC	TCGCCCTCATC	CTCTAACGTC	CAAACCCCG	GTGTAGTTAT
2651	AAATTCTAAA	TACTTTAATG	TTTCAACAGG	GTCAAGTTTA	AGATTTAAAA
2701	CTTCAGGCTC	AACAAAAC	GGCTTCTCAA	TAGAGAAAGA	TTTAACTTTA
2751	AATGCCACCG	GAGGCAACAT	AACACTTTTG	CAAGTTGAAG	GCACCGATGG
2801	AATGATTGGT	AAAGGCATTG	TAGCCAAAAA	AAACATAACC	TTTGAAGGAG
2851	GTAACATCAC	CTTTGGCTCC	AGGAAAGCCG	TAACAGAAAT	CGAAGGCAAT
2901	GTTACTATCA	ATAACAACGC	TAAACGTCAC	CTTATCGGTT	CGGATTTTGA
2951	CAACCATCAA	AAACCTTTAA	CTATTAAAAA	AGATGTCATC	ATTAATAGCG
3001	GCAACCTTAC	CGCTGGAGGC	AATATTGTCA	ATATAGCCGG	AAATCTTACC
3051	GTGAAAGTA	ACGCTAATTT	CAAAGCTATC	ACAAAATTCA	CTTTTAATGT
3101	AGCGGGCTTG	TTTGACAACA	AAGGCAATTC	AAATATTCC	ATTGCCAAAG
3151	GAGGGGCTCG	CTTTAAAGAC	ATTGATAATT	CCAAGAAATT	AAGCATCACC

FIG. 1F.

4001	AATTAAGGA	ACCGAGAGTG	TAACCACTTC	AAGTCAATCA	GCGATATCG
4051	GCGGTACGAT	TTCTGGTGGC	ACAGTAGAGG	TTAAAGCAAC	CGAAAGTTTA
4101	ACCACTCAAT	CCAATTCAAA	AATTAAAGCA	ACAACAGGCG	AGGCTAACGT
4151	AACAAGTGCA	ACAGGTACAA	TTGGTGGTAC	GATTTCCGGT	AATACGGTAA
4201	ATGTTACGGC	AAACGCTGGC	GATTTAACAG	TTGGGAATGG	CGCAGAAATT
4251	AATGCGACAG	AAGGAGCTGC	AACCTTAACT	ACATCATCGG	GCAAAATTAAAC
4301	TACCGAAGCT	AGTTCACACA	TTACTTCAGC	CAAGGGTCAG	GTAAATCTTT
4351	CAGCTCAGGA	TGGTAGCGTT	GCAGGAAGTA	TTAATGCCGC	CAATGTGACA
4401	CTAAATACTA	CAGGCACTTT	AAC TACCGTG	AAGGGTTCAA	ACATTAATGC
4451	AACCAGCGGT	ACCTTGGTTA	TTAACGCAAA	AGACGCTGAG	CTAAATGGCG
4501	CAGCATTGGG	TAACCCACACA	GTGGTAAATG	CAACCAACGC	AAATGGCTCC
4551	GGCAGCGTAA	TCGCGACAAC	CTCAAGCAGA	GTGAACATCA	CTGGGGATTT
4601	AATCACAAATA	AATGGATTAA	ATATCATTTC	AAAAAACGGT	ATAAACACCG
4651	TACTGTTAAA	AGGCGTTAAA	ATTGATGTGA	AATACATTCA	ACCGGGTATA
4701	GCAAGCGTAG	ATGAAGTAAT	TGAAGCGAAA	CGCATCCTTG	AGAAGGTAAA
4751	AGATTATCT	GATGAAGAAA	GAGAAGCGTT	AGCTAAACTT	GGAGTAAGTG
4801	CTGTACGTTT	TATTGAGCCA	AATAATACAA	TTACAGTCCA	TACACAAAAT

FIG. 1G.

4851	GAATTGCAA	CCAGACCATT	AAGTCGAATA	GTGATTTCTG	AAGGCAGGGC
4901	GTGTTTCTCA	AACAGTGATG	GCGCGACGGT	GTGCGTTAAT	ATCGCTGATA
4951	ACGGGCGGTA	GCGGTCAGTA	ATTGACAAGG	TAGATTTTCAT	CCTGCAATGA
5001	AGTCATTTTA	TTTTTCGTATT	ATTTACTGTG	TGGGTTAAAG	TTCAGTACGG
5051	GCTTTACCCA	TCTTGTAATA	AATTACGGAG	AATACAATAA	AGTATTTTTA
5101	ACAGGTTATT	ATTATG			

FIG. 2A. AMINO ACID SEQUENCE OF HIGH MOLECULAR WEIGHT

PROTEIN I

1	MNKIYRLKFS	KRLNALVAVS	ELARGCDHST	EKGSEKPARM	KVRHLALKPL
51	SAMLLSLGVT	SIPQSVLASG	LQGMDVVHGT	ATMQVDGNKT	IIRNSVDAIL
101	NWKQFNIDQN	EMVQFLQENN	NSAVFNRVTS	NQISQLKGIL	DSNGQVFLIN
151	PNGITIGKDA	IINTNGFTAS	TLDISNENIK	ARNFTFEQTK	DKALAEIVNH
201	GLITVGKDG	VNLIGGKVK	EGVISVNGGS	ISLLAGQKIT	ISDIINPTIT
251	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNQGKLSADS	VSKDKSGNIV
301	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
351	TYLGGDERGE	GKNGIQLAKK	TSLEKGSTIN	VSGKEKGGRA	IVWGDIALID
401	GNINAQSGD	IAKTGGFVET	SGHDLFIKDN	AIVDAKEWLL	DFDNVSINAE
451	TAGRSNTSED	DEYTGSGNSA	STPKRNKEKT	TLTNTTLESI	LKKGTFVNIT
501	ANQRIYVNSS	INLSNGSLTL	WSEGRSGGV	EINNDITTD	DTRGANLTIY
551	SGGWVDVHKN	ISLGAQGNIN	ITAKQDIAFE	KGSNQVITGQ	GTITSGNQKG
601	FRFNNVSLNG	TGSLQFTTK	RTNKYAITNK	FEGTLNISGK	VNISMVLPKN
651	ESGYDKFKGR	TYWNLTSLNV	SESGEFNLTI	DSRGSDSAGT	LTQPYNLNGI
701	SFNKDTTFNV	ERNARVNFDI	KAPIGINKYS	SLNYASFNGN	ISVSGGGSVD

FIG. 2B.

751	FTLLASSNV	QTPGVVINSK	YFNVSTGSSL	RFKTSGSTKT	GFSIEKDLTL
801	NATGGNITLL	QVEGTDGMIG	KGIVAKKNIT	FEGGNITFGS	RKAVTEIEGN
851	VTINNANVT	LIGSDFDNHQ	KPLTIKKDVI	INSGNLTAGG	NIVNIAGNLT
901	VESNANFKAI	TNFTFNVGGL	FDNKGNSNIS	IAKGGARFKD	IDNSKNLSIT
951	TNSSSTYRTI	ISGNITNKNG	DLNITNEGSD	TEMQIGGDVS	QKEGNLTISS
1001	DKINITKQIT	IKAGVDGENS	DSDATNNANL	TIKTKELKLT	QDLNISGFNK
1051	AEITAKDGSD	LTIGNTNSAD	GTNAKKVTFN	QVKDSKISAD	GHKVTLHSKV
1101	ETSGSNNNTE	DSSDNNAGLT	IDAKNVTVNN	NITSHKAIVI	SATSGEITTK
1151	TGTTINATG	NVEITAQTGS	ILGGIESSSG	SVTLTATEGA	LAVSNISGNT
1201	VTVTANS GAL	TTLAGSTIKG	TESVTTSSQS	GDIGGTISGG	TVEVKATESL
1251	TTQSNSKIIKA	TTGEANVTSA	TGTIGGTISG	NTVNVATANAG	DLTVGNNGAEI
1301	NATEGAATLT	TSSGKLTTEA	SSHITSAKGQ	VNLSAQDGSV	AGSINAANVT
1351	LNTTGTLTTV	KGSNINATSG	TLVINAKDAE	LNGAALGNHT	VVNATNANGS
1401	GSVIATTSSR	VNITGDLITI	NGLNIISKNG	INTVLLKGVK	IDVKYIQPGI
1451	ASVDEVIEAK	RILEKVKDLS	DEEREALAKL	GVSAVRFIEP	NNTITVDTQN
1501	EFATRPLSRI	VISEGRACFS	NSDGATVCVN	IADNGR	

FIG. 3A.

DNA SEQUENCE OF HIGH MOLECULAR WEIGHT
PROTEIN II (HMW2)

1 TAAATATACA AGATAATAAA AATAAATCAA GATTTTGTG ATGACAAACA
51 ACAATTACAA CACCTTTTTT GCAGTCTATA TGCAAAATATT TTAATAAAAT
101 AGTATAAATC CGCCATATAA AATGGTATAA TCTTTCATCT TTCACTCTTA
151 ATCTTTCATC TTTCATCTTT CATCTTTCAT CTTTCATCTT TCATCTTTCA
201 TCTTTCATCT TTCATCTTTC ATCTTTCATC TTTTCATCTT CACATGAAAT
251 GATGAACCGA GGAAGGGAG GGAGGGCAA GAATGAAGAG GGAGCTGAAC
301 GAACGCAAAT GATAAAGTAA TTAAATTGTT CAACTAACCT TAGGAGAAAA
351 TATGAACAAG ATATATCGTC TCAAATTTCAG CAAACGCCCTG AATGCTTTGG
401 TTGCTGTGTC TGAATTGGCA CGGGGTTGTG ACCATTCCAC AGAAAAAGGC
451 TTCCGCTATG TTAATACTTT TAGGTGTAAAC CACTTAGCGT TAAAGCCACT
501 TTCCGCTATG TTAATACTTT TAGGTGTAAAC ATCTATTCCA CAATCTGTTT
551 TAGCAAGCGG CTTACAAGGA ATGGATGTAG TACACGGCAC AGCCACTATG
601 CAAGTAGATG GTAATAAAAC CATTATCCGC AACAGTGTG ACGCTATCAT
651 TAATTGGAAA CAATTTAACA TCGACCAAAA TGAAATGGTG CAGTTTTTAC
701 AAGAAAACAA CAACTCCGCC GTATTCAACC GTGTTACATC TAACCAAATC

FIG. 3B.

751	TCCCAATTAA	AAGGATTTT	AGATTCTAAC	GGACAAGTCT	TTTTAATCAA
801	CCCAAATGGT	ATCACAAATAG	GTAAAGACGC	AATTATTAAC	ACTAATGGCT
851	TTACGGCTTC	TACGCTAGAC	ATTCTTAACG	AAAACATCAA	GGCGCGTAAT
901	TTCACCTTCG	AGCAAAACCAA	AGATAAAGCG	CTCGCTGAAA	TTGTGAATCA
951	CGGTTTAATT	ACTGTCGGTA	AAGACGGCAG	TGTAAATCTT	ATTGGTGGCA
1001	AAGTGAAAAA	CGAGGGTGTG	ATTAGCGTAA	ATGGTGGCAG	CATTCTCTTA
1051	CTCGCAGGGC	AAAAAATCAC	CATCAGCCGAT	ATAATAAACC	CAACCATTAC
1101	TTACAGCATT	GCCGCGCCTG	AAAATGAAGC	GGTCAATCTG	GGCGATATTT
1151	TTGCCAAAGG	CGGTAACATT	AATGTCCGTG	CTGCCACTAT	TCGAAAACCAA
1201	GGTAAACTTT	CTGCTGATT	TGTAAGCAAA	GATAAAAGCG	GCAATATTGT
1251	TCTTTCCGCC	AAAGAGGGTG	AAGCGGAAAT	TGGCGGTGTA	ATTCCCGCTC
1301	AAAATCAGCA	AGCTAAAGGC	GGCAAGCTGA	TGATTACAGG	CGATAAAGTC
1351	ACATTAAAAA	CAGGTGCAGT	TATCGACCTT	TCAGGTAAAG	AAGGGGGAGA
1401	AACTTACCTT	GGCGGTGACG	AGCGCGGCCG	AGGTAAAAAC	GGCATTTCAAT
1451	TAGCAAAAGAA	AACCTCTTTA	GAAAAAGGCT	CAACCATCAA	TGTATCAGGC
1501	AAAGAAAAAG	GCGGACGCCG	TATTGTGTGG	GGCGATATTG	CGTTAAATTGA

FIG. 3C.

1551 CCGCAATATT AACGCTCAAG GTAGTGGTGA TATCGCTAAA ACCGGTGGTT
1601 TTGTGGAGAC ATCGGGGCAT TATTATCCA TTGACAGCAA TGCAATTGTT
1651 AAAACAAAAG AGTGGTTGCT AGACCCCTGAT GATGTAACAA TTGAAGCCGA
1701 AGACCCCTT CGCAATAATA CCGGTATAAA TGATGAATTC CCAACAGGCA
1751 CCGGTGAAGC AAGCGACCCT AAAAAAATA GCGAACTCAA AACAAACGCTA
1801 ACCAATACAA CTATTTCAAATTATCTGAAA AACGCCTGGA CAATGAATAT
1851 AACGGCATCA AGAAAACTTA CCGTTAATAG CTCAATCAAC ATCGGAAGCA
1901 ACTCCCACCTT AATTCTCCAT AGTAAAGGTC AGCGTGGCGG AGGCGTTCAG
1951 ATTGATGGAG ATATTACTTC TAAAGGCGGA AATTTAACCA TTTATTCTGG
2001 CGGATGGGTT GATGTTTATA AAAATATTAC GCTTGATCAG GGTTTTTTAA
2051 ATATTACCGC CGCTTCCGTA GCTTTTGAAG GTGGAAATAA CAAAGCACGC
2101 GACGCGGCAA ATGCTAAAAT TGTGCCCCAG GGCACGTGTA CCATTACAGG
2151 AGAGGGAAAA GATTTCAGGG CTAACAACGT ATCTTTAAAC GGAACGGGTA
2201 AAGGTCTGAA TATCATTTCA TCAGTGAATA ATTTAACCCA CAATCTTAGT
2251 GGCACAAATTA ACATATCTGG GAATATAACA ATTAACCAA CTACGAGAAA
2301 GAACACCTCG TATTGGCAAA CCAGCCATGA TTCGCACTGG AACGTCAGTG
2351 CTCCTTAATCT AGAGACAGGC GCAAATTTTA CCTTTATTAA ATACATTCA

FIG. 3D.

2401 AGCAATAGCA AAGGCTTAAC AACACAGTAT AGAAGCTCTG CAGGGGTGAA
2451 TTTTAAACGGC GTAAATGGCA ACATGTCAAT CAATCTCAAA GAAGGAGCGA
2501 AAGTTAATTT CAAATTAAAA CCAAACGAGA ACATGAACAC AAGCAAACCT
2551 TTACCAATTC GGTTTTTAGC CAATATCACA GCCACTGGTG GGGGCTCTGT
2601 TTTTTTTGAT ATATATGCCA ACCATTCTGG CAGAGGGGCT GAGTTAAAAA
2651 TGAGTGAAAT TAATATCTCT AACGGCGCTA ATTTTACCTT AAATTCCCCT
2701 GTTCGCGGCG ATGACGCTTT TAAAATCAAC AAAGACTTAA CCATAAATGC
2751 AACCAATTCA AATTTCAGCC TCAGACAGAC GAAAGATGAT TTTTATGACG
2801 GGTACGCACG CAATGCCATC AATTCAACCT ACAACATATC CATTCTGGGC
2851 GGTAATGTCA CCTTGGTGG ACAAAACTCA AGCAGCAGCA TTACGGGGAA
2901 TATTACTATC GAGAAAGCAG CAAATGTTAC GCTAGAAGCC AATAACGCCC
2951 CTAATCAGCA AAACATAAGG GATAGAGTTA TAAAACCTGG CAGCTTGCTC
3001 GTTAATGGGA GTTTAAGTTT AACTGGCGAA AATGCAGATA TTAAAGGCAA
3051 TCTCACTATT TCAGAAAGCG CCACTTTTAA AGGAAAGACT AGAGATACCC
3101 TAAATATCAC CGGCAATTTT ACCAATAATG GCACTGCCGA AATTAATATA
3151 ACACAAGGAG TGGTAAAACT TGGCAATGTT ACCAATGATG GTGATTTTAA

FIG. 3E.

3201 CATTACCACT CACGCTAAAC GCAACCAAAG AAGCATCATC GGCGGAGATA
3251 TAATCAACAA AAAAGGAAGC TTAAATATTA CAGACAGTAA TAATGATGCT
3301 GAAATCCAA TTGGCGGCAA TATCTCGCAA AAAGAAGGCA ACCTCACGAT
3351 TTCTTCCGAT AAAATTAAATA TCACCAAACA GATAACAATC AAAAAGGGTA
3401 TTGATGGAGA GGACTCTAGT TCAGATGCCA CAAGTAATGC CAACCTAACT
3451 ATTAAAACCA AAGAATTGAA ATTGACAGAA GACCTAAGTA TTTCAGGTTT
3501 CAATAAAGCA GAGATTACAG CCAAAGATGG TAGAGATTTA ACTATTGGCA
3551 ACAGTAATGA CGGTAACAGC GGTGCCGAAG CCAAAACAGT AACTTTTAAC
3601 AATGTTAAAG ATTCAAAAAAT CTCTGCTGAC GGTCAACAATG TGACACTAAA
3651 TAGCAAAGTG AAAACATCTA GCAGCAATGG CGGACGTGAA AGCAATAGCG
3701 ACAACGATAC CGGCTTAACT ATTACTGCAA AAAATGTAGA AGTAAACAAA
3751 GATATTACTT CTCTCAAAAC AGTAAATATC ACCGCGTCGG AAAAGGTAC
3801 CACCACAGCA GGCTCGACCA TTAACGCAAC AAATGGCAA GCAAGTATTA
3851 CAACCAAAC AGGTGATATC AGCGGTACGA TTTCGGTAA CACGGTAAGT
3901 GTAGCGCGA CTGGTGATTT AACCACATAA TCCGGCTCAA AAATTGAAGC
3951 GAAATCGGGT GAGGCTAATG TAACAAGTGC AACAGGTACA ATTGGCGGTA

FIG. 3F.

4001	CAATTTCGGG	TAATACGGTA	AATGTTACGG	CAAACGCTGG	CGATTTAACA
4051	GTTGGGAATG	GCGCAGAAAT	TAATGCGACA	GAAAGGAGCTG	CAACCTTAAC
4101	CGCAACAGGG	AATACCTTGA	CTACTGAAGC	CGGTTCTAGC	ATCACTTCAA
4151	CTAAGGGTCA	GGTAGACCTC	TTGGCTCAGA	ATGGTAGCAT	CGCAGGAAGC
4201	ATTAATGCTG	CTAATGTGAC	ATTAAATACT	ACAGGCACCT	TAACCAACCGT
4251	GGCAGGCTCG	GATATTAAAG	CAACCAGCCG	CACCTTGCTT	ATTAACGCAA
4301	AAGATGCTAA	GCTAAATGGT	GATGCATCAG	GTGATAGTAC	AGAAGTGAAT
4351	GCAGTCAACG	CAAGCGGCTC	TGGTAGTGTG	ACTGCGGCAA	CCTCAAGCAG
4401	TGTGAATATC	ACTGGGGATT	TAAACACAGT	AAATGGGTTA	AAATATCATTT
4451	CGAAAGATGG	TAGAAACACT	GTGCGCTTAA	GAGGCAAGGA	AATTGAGGTG
4501	AAATATATCC	AGCCAGGTGT	AGCAAGTGTA	GAAGAAGTAA	TTGAAGCGAA
4551	ACGCGTCCTT	GAAAAGATA	AAGATTATC	TGATGAAGAA	AGAGAAACAT
4601	TAGCTAAACT	TGGTGTAAGT	GCTGTACGTT	TTGTTGAGCC	AAATAATACA
4651	ATTACAGTCA	ATACACAAAA	TGAATTTACA	ACCAGACCCGT	CAAGTCAAGT
4701	GATAATTCT	GAAGTAAGG	CGTGTTTCTC	AAGTGGTAAT	GGCGACGAG
4751	TATGTACCAA	TGTTGCTGAC	GATGGACAGC	CGTAGTCAGT	AATGACAAG
4801	GTAGATTCA	TCCTGCAATG	AAGTCATTTT	ATTTTCGTAT	TATTACTGT

FIG. 3G.

4851 GTGGGTTAAA GTTCAGTACG GGCTTTACCC ATCTTGTAAG AAATTACGGA
4901 GAATACAATA AAGTATTTTT AACAGGTTAT TATTATG

FIG. 4A. AMINO ACID SEQUENCE OF HIGH MOLECULAR WEIGHT
PROTEIN 2

1	MNKIYRLKFS	KRLNALVAVS	ELARGCDHST	EKGSEKPARM	KVRHLALKPL
51	SAMLLSLGVT	SIPQSVLASG	LQGMDVVHGT	ATMQVDGNKT	IIRNSVDAII
101	NWKQFNIDQN	EMVQFLQENN	NSAVFNVRTS	NQISQLKGIL	DSNGQVFLIN
151	PNGITIGKDA	IINTNGFTAS	TLDISNENIK	ARNFTFEQTK	DKALAEIVNH
201	GLITVGKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT	ISDIINPTIT
251	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNQGKLSADS	VSKDKSGNIV
301	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
351	TYLGGDERGE	GKNGIQLAKK	TSLEKGSTIN	VSGKEKGGRA	IVWGDIALID
401	GNINAQSGD	IAKTGGFVET	SGHDLFIKDN	AIVDAKEWLL	DFDNVSINAE
451	DPLRNNNTGIN	DEFPGTGGEA	SDPKKNSELK	TTLTNTTISN	YLNKNAWTMNI
501	TASRKLTVNS	SINIGSNSHL	ILHSGQRRG	GVQIDGDITS	KGGNLTIIYS
551	GWVDVHKNIT	LDQGFLNITA	ASVAFEGGNN	KARDAANAKI	VAQGTVTITG
601	EGKDFRANNV	SLNGTGKGLN	IISVVNNLTH	NLSGTINISG	NITINQTRK
651	NTSYWQTSHD	SHWNVSALNL	ETGANFTFIK	YISSNSKGLT	TQYRSSAGVN
701	FNGVNGNMSF	NLKEGAKVNF	KLKPNENMNT	SKPLPIRFLA	NITATGGGSV

FIG. 4B.

751	FFDIYANHSG	RGAELKMSEI	NISNGANFTL	NSHVRGDDAF	KINKDLTINA
801	TNSNFSLRQT	KDDFYDGYAR	NAINSTYNIS	ILGGNVTLGG	QNSSSSITGN
851	ITIEKAANVT	LEANNAPNQO	NIRDRVIKLG	SLLVNGSLSL	TGENADIKGN
901	LTISESATFK	GKTRDTLNI	GNFTNNGTAE	INITQGUVKL	GNVTNDGDNL
951	ITTHAKRNQR	SIIGGDIINK	KGSLNITDSN	NDAEIQIGGN	ISQKEGNLTI
1001	SSDKINITKQ	ITIKKGIDGE	DSSSDATSNA	NLTIKTKELK	LTEDLSISGF
1051	NKAEITAKDG	RDLTIGNSND	GNSGAEAKTV	TFNNVKDSKI	SADGHNVTNL
1101	SKVKTSSSNG	GRESNSDNDT	GLTITAKNVE	VNKDITSLKT	VNITASEKVT
1151	TTAGSTINAT	NGKASITTKT	GDISGTISGN	TVSVSATVDL	TTKSGSKIEA
1201	KSGEANVTSA	TGTIGGTISG	NTVNVATANAG	DLTVGNGAEI	NATEGAATLT
1251	ATGNTLTTEA	GSSITSTKGQ	VDLLAQNGSI	AGSINAANVT	LNTTGTLTTV
1301	AGSDIKATSG	TLVINAKDAK	LNGDASGDST	EVNAVNASGS	GSVTAATSSS
1351	VNITGDLNTV	NGLNIIISKDG	RNTVRLRGKE	IEVKYIQPGV	ASVEEVIEAK
1401	RVLEKVKDLS	DEERETLAKL	GVSAVRFVEP	NNTITVNTQN	EFTTRPSSQV
1451	IISEGKACFS	SGNGARVCTN	VADDGOP		

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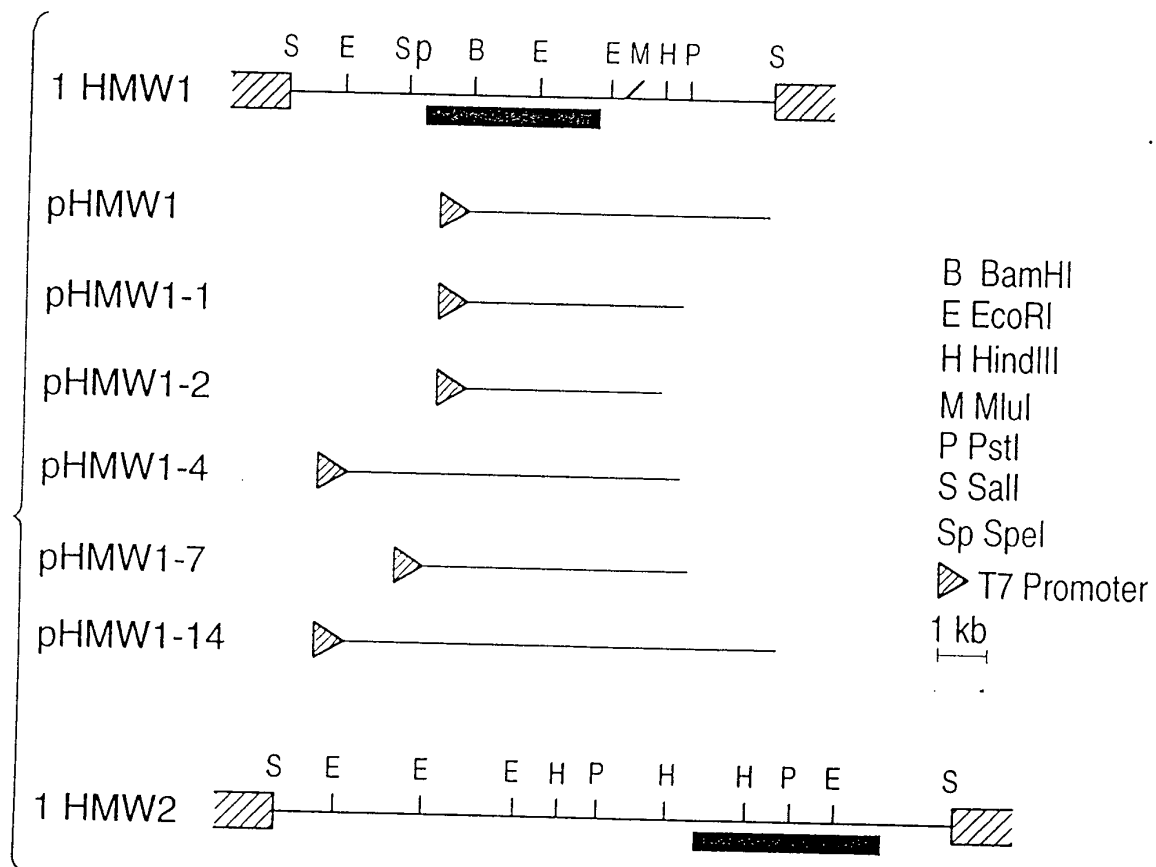


FIG.5 A.

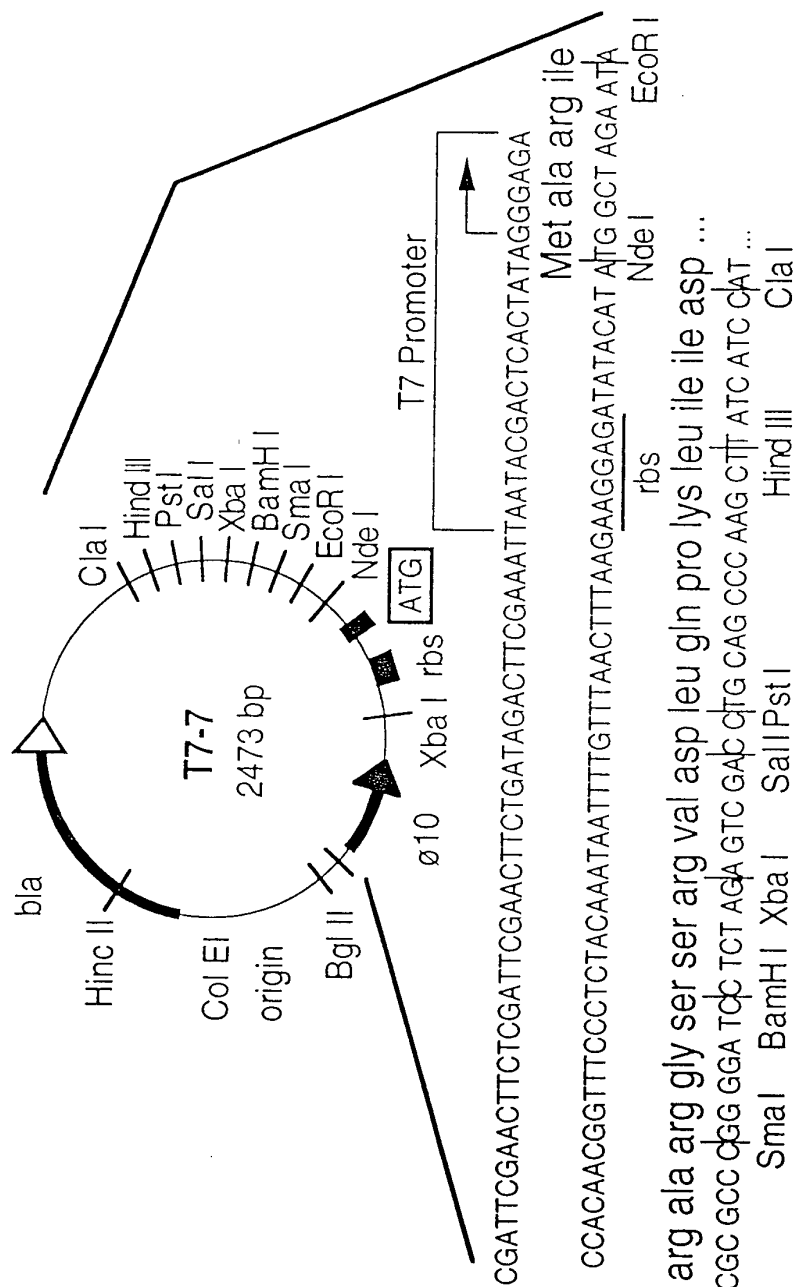


FIG. 5B.

(A) Partial restriction maps of representative HMW1 and HMW2 recombinant phage and of HMW1 plasmid subclones. The shaded boxes indicate the locations of the structural genes. In the recombinant phage, transcription proceeds from left to right for the HMW1 gene and from right to left for the HMW2 gene. The methods used for construction of the plasmids shown are described in the text. (B) Restriction map of the T7 expression vector pT7-7. This vector contains the T7 RNA polymerase promoter $\phi 10$, a ribosome - binding site (rbs), and the translational start site for the T7 gene 10 protein upstream from a multiple cloning site (37).

FIG. 6A.

1 ACAGCGTTCT CTTAATACTA GTACAAACCC ACAATAAAT ATGACAAACA
51 ACAATTACAA CACCTTTTTT GCAGTCTATA TGCAAAATATT TTAAAAAATA
101 GTATAAATCC GCCATATAAA ATGGTATAAT CTTTCATCTT TCATCTTTCA
151 TCTTTTCATCT TTCATCTTTC ATCTTTCATC TTTTCATCTT CATCTTTTCAT
201 CTTTCATCTT TCATCTTTTCA TCTTTCATCT TTCATCTTTC ACATGAAAATG
251 ATGAACCGAG GGAAGGGAGG GAGGGCAAG AATGAAGAGG GAGCTGAACG
301 AACGCAAATG ATAAAGTAAT TTAATTGTTC AACTAACCTT AGGAGAAAAAT
351 ATGAACAAGA TATATCGTCT CAAATTCAGC AAACGCCCTGA ATGCTTTGGT
401 TGCTGTGTCT GAATTGGCAC GGGTTGTGA CCATTCCACA GAAAAAGGCA
451 GCGAAAAAAC TGCTCGCATG AAAGTGCCTC ACTTAGCGTT AAAGCCACTT
501 TCCGCTATGT TACTATCTTT AGGTGTAACA TCTATTCCAC AATCTGTTTT
551 AGCAAGCGGC TTACAAGGAA TGGATGTAGT ACACGGCACA GCCACTATGC
601 AAGTAGATGG TAATAAAACC ATTATCCGCA ACAGTGTTGA CGCTATCATT
651 AATTGGAAAC AATTAAACAT CGACCAAAAT GAAATGGTGC AGTTTTTACA
701 AGAAAAACAAC AACTCCGCCG TATTCAACCG TGTACATCT AACCAAATCT
751 CCCAATTAAA AGGGATTTTA GATTCTAACG GACAAGTCTT TTTAATCAAC

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801	CCAAATGGTA	TCACAATAGG	TAAAGACGCA	ATTATTAAACA	CTAATGGCTT
851	TACGGCTTCT	ACGCTAGACA	TTTCTAACGA	AAACATCAAG	GCGCGTAATT
901	TCACCTTCGA	GCAAACCAAA	GATAAAGCGC	TCGCTGAAAT	TGTGAATCAC
951	GGTTTAATTA	CTGTCGGTAA	AGACGGCAGT	GTAATCTTA	TTGGTGGCAA
1001	AGTGAAAAAC	GAGGTGTGA	TTAGCGTAAA	TGGTGGCAGC	ATTTCCTTAC
1051	TCGCAGGGCA	AAAAATCACC	ATCAGCGATA	TAATAAACCC	AACCATTACT
1101	TACAGCATTG	CCGCGCCTGA	AAATGAAGCG	GTCAATCTGG	GCGATATTTT
1151	TGCCAAAGGC	GGTAACATTA	ATGTCCGTGC	TGCCACTATT	CGAAACCAAG
1251	CTTCCGCCA	AAGAGGGTGA	AGCGGAAATT	GGCGGTGTAA	TTTCCGCTCA
1301	AAATCAGCAA	GCTAAAGCG	GCAAGCTGAT	GATTACAGGC	GATAAAGTCA
1351	CATTAAAAAC	AGGTGCAGTT	ATCGACCTTT	CAGGTAAAGA	AGGGGGAGAA
1401	ACTTACCCTG	GCGGTGACGA	GCGCGCGGAA	GGTAAAAACG	GCATTCAATT
1451	AGCAAAAGAAA	ACCTCTTTAG	AAAAAGGCTC	AACCATCAAT	GTATCAGGCA
1501	AAGAAAAAGG	CGGACGCGCT	ATTGTGTGGG	GCGATATTGC	GTTAATTGAC
1551	GGCAATATTA	ACGCTCAAGG	TAGTGGTGAT	ATCGCTAAAA	CCGGTGGTTT
1601	TGTGGAGACG	TCGGGGCATG	ATTTATTTCAT	CAAAGACAAT	GCAATTGTTG

FIG. 6C.

1651 ACGCCAAAGA GTGGTTGTTA GACCCGGATA ATGTATCTAT TAATGCAGAA
 1701 ACAGCAGGAC GCAGCAATAC TTCAGAAAGAC GATGAATACA CGGATCCGG
 1751 GAATAGTGCC AGCACCCCAA AACGAAACAA AGAAAAGACA ACATTAACAA
 1801 ACACAACTCT TGAGAGTATA CTAAAAAAG GTACCTTTGT TAACATCACT
 1851 GCTAATCAAC GCATCTATGT CAATAGCTCC ATTAATTTAT CCAATGGCAG
 1901 CTTAACTCTT TGGAGTGAGG GTCGGAGCGG TGGCGGCGTT GAGATTAAAC
 1951 ACGATATTAC CACCGGTGAT GATACCAGAG GTGCAAACTT AACAAATTAC
 2001 TCAGGCGGCT GGGTTGATGT TCATAAAAAT ATCTCACTCG GGGCGCAAGG
 2051 TAACATAAAC ATTACAGCTA AACAAAGATAT CGCCTTTGAG AAAGGAAGCA
 2101 ACCAAGTCAT TACAGGTCAA GGGACTATTA CCTCAGGCAA TCAAAAAGGT
 2151 TTTAGATTTA ATAATGTCTC TCTAAACGGC ACTGGCAGCG GACTGCAATT
 2201 CACCACTAAA AGAACCAATA AATACGCTAT CACAAATAAA TTTGAAGGGA
 2251 CTTTAAATAT TTCAGGGAAA GTGAACATCT CAATGGTTT ACCTAAAAAT
 2301 GAAAGTGGAT ATGATAAATT CAAAGGACGC ACTTACTGGA ATTTAACCTC
 2351 GAAAGTGGAT ATGATAAATT CAAAGGACGC CCTCACTATT GACTCCAGAG
 2401 GAAGCGATAG TGCAGGCACA CTTACCCAGC CTTATAATTT AAACGGTATA
 2451 TCATTCAACA AAGACACTAC CTTTAATGTT GAACGAAATG CAAGAGTCAA

FIG. 6D.

2501	CTTTGACATC	AAGGCACCAA	TAGGGATAAA	TAAGTATTCT	AGTTTGAATT
2551	ACGCATCATT	TAATGGAAAC	ATTTCAGTTT	CGGGAGGGG	GAGTGTGAT
2601	TTCACACTTC	TCGCCTCATC	CTCTAACGTC	CAAACCCCG	GTGTAGTTAT
2651	AAATTCTAAA	TACTTTAATG	TTTCAACAGG	GTCAAAGTTA	AGATTTAAAA
2701	CTTCAGGCTC	AACAAAAACT	GGCTTCTCAA	TAGAGAAAGA	TTTAACTTTA
2751	AATGCCACCG	GAGGCAACAT	AACACTTTTG	CAAGTTGAAG	GCACCGATGG
2801	AATGATTGGT	AAAGGCATTG	TAGCCAAAAA	AAACATAACC	TTTGAAGGAG
2851	GTAAGATGAG	GTTTGGCTCC	AGGAAAGCCG	TAACAGAAAT	CGAAGGCAAT
2901	GTTACTATCA	ATAACAACGC	TAACGTCACT	CTTATCGGTT	CGGATTTTGA
2951	CAACCATCAA	AAACCTTTAA	CTATTAAAAA	AGATGTCATC	ATTAATAGCG
3001	GCAACCTTAC	CGCTGGAGGC	AAATTTGTCA	ATATAGCCCG	AAATCTTACC
3051	GTTGAAAGTA	ACGCTAATTT	CAAAGCTATC	ACAAAATTCA	CTTTAATGT
3101	AGGCGGCTTG	TTTGACAACA	AAGGCAATTC	AAATATTTCC	ATTGCCAAAG
3151	GAGGGGCTCG	CTTTAAAGAC	ATTGATAATT	CCAAGAAATT	AAGCATCACC
3201	ACCAACTCCA	GCTCCACTTA	CCGCACATTT	ATAAGCGGCA	ATATAACCAA
3251	TAAAAACGGT	GATTTAAATA	TTACGAACGA	AGGTAGTGAT	ACTGAAATGC

FIG. 6E.

3301 AAATGGCGG CGATGTCTCG CAAAAAGAAG GTAATCTCAC GATTCTTCT
3351 GACAAAATCA ATATTACCAA ACAGATAACA ATCAAGGCAG GTGTTGATGG
3401 GGAGAAATCC GATTCAGACG CGACAAACAA TGCCAATCTA ACCATTAAAA
3451 CCAAAGAATT GAAATTAAACG CAAGACCCTAA ATATTTCAGG TTCAATAAAA
3501 GCAGAGATTA CAGCTAAAGA TGGTAGTGAT TTAACCTATTG GTAACACCAA
3551 TAGTGCTGAT GGTAATAATG CCAAAAAAGT AACCTTTAAC CAGGTTAAAG
3601 ATTCAAAAAT CTCTGCTGAC GGTCACAAGG TGACACTACA CAGCAAAGTG
3651 GAAACATCCG GTAGTAATAA CAACACTGAA GATAGCAGTG ACAATAATGC
3701 CGGCTTAAC ATCGATGCAA AAAATGTAAC AGTAAACAAC AATATTACTT
3751 CTCACAAAGC AGTGAGCATC TCTGCGACAA GTGGAGAAAT TACCACATAA
3801 ACAGGTACAA CCATTAAACG AACCACTGGT AACGTGGAGA TAACCGCTCA
3851 AACAGGTAGT ATCCTAGGTG GAATTGAGTC CAGCTCTGGC TCTGTAACAC
3901 TTTACTGCAAC CGAGGGCGCT CTTGCTGTAA GCAATATTTC GGGCAACACC
3951 GTTACTGTTA CTGCAAAATAG CGGTGCATTA ACCACTTTGG CAGGCTCTAC
4001 AATTAAAGGA ACCGAGAGTG TAACCACTTC AAGTCAATCA GCGATATCG
4051 GCGGTACGAT TTCTGGTGGC ACAGTAGAGG TTAAAGCAAC CGAAAGTTTA

FIG. 6F.

4101 ACCACTCAAT CCAATTCAAA AATTAAAGCA ACAACAGGCG AGGCTAACGT
4151 AACAAAGTGCA ACAGGTACAA TTGGTGGTAC GATTTCGGT AATACGGTAA
4201 ATGTTACGGC AAACGCTGGC GATTTAACAG TTGGGAATGG CGCAGAAAAT
4251 AATGCGACAG AAGGAGCTGC AACCTTAACT ACATCATCGG GCAAAATTAAC
4301 TACCGAAGCT AGTTCACACA TTACTTCAGC CAAGGGTCAG GTAAATCTTT
4351 CAGCTCAGGA TGGTAGCGTT GCAGGAAGTA TTAATGCCGC CAATGTGACA
4401 CTAAATACTA CAGGCACTTT AACTACCGTG AAGGGTTCAA ACATTAAATGC
4451 AACCAGCGGT ACCTTGTTA TTAACGCAAA AGACGCTGAG CTAAATGGCG
4501 CAGCATTGGG TAACCACACA GTGGTAAATG CAACCAACGC AAATGGCTCC
4551 GGCAGCGTAA TCGCGACAAC CTCAGCAGA GTGAACATCA CTGGGGATT
4601 AATCACAAATA AATGGATTAA ATATCATTTT AAAAAACGGT ATAAACACCCG
4651 TACTGTTAAA AGGCGTTAAA ATTGATGTGA AATACATTCA ACCGGGTATA
4701 GCAAGCGTAG ATGAAGTAAT TGAAGCGAAA CGCATCCTTG AGAAGGTAAA
4751 AGATTATCT GATGAAGAAA GAGAAGCGTT AGCTAAACTT GCGGTAAGTG
4801 CTGTACGTTT TATTGAGCCA AATAATACAA TTACAGTCGA TACACAAAAT
4851 GAATTGCAA CCAGACCATT AAGTCGAATA GTGATTCTG AAGCAGGCG
4901 GTGTTTCTCA AACAGTGATG GCGGACGGT GTGCGTTAAT ATCGCTGATA

FIG. 6G.

4951 ACGGGCGGTA GCGGTCAGTA ATTGACAAGG TAGATTTTCAT CCTGCAATGA
5001 AGTCATTTTA TTTTCGTATT ATTTACTGTG TGGGTTAAAG TTCAGTACGG
5051 GCTTTACCCA TCTTGTA AAA AATTACGGAG AATACAAATA AGTATTTTA
5101 ACAGGTTATT ATTATGAAAA ATATAAAAAG CAGATTAAAA CTCAGTGCAA
5151 TATCAGTATT GCTTGGCCCTG GCTTCTTCAT CATGTATGC AGAAGAAGCG
5201 TTTT TAGTAA AAGGCTTTCA GTTATCTGGT GCACTTGAAA CTTAAGTGA
5251 AGACGCCCAA CTGTCTGTAG CAAAATCTTT ATCTAAATAC CAAGGCTCGC
5301 AAAC TTAAAC AAACCTAAAA ACAGCACAGC TTGAATTACA GGCTGTGCTA
5351 GATAAGATTG AGCCAAATAA GTTGATGTG ATATTGCCAC AACAAACCAT
5401 TACGGATGGC AATATTATGT TTGAGCTAGT CTCGAAATCA GCCGCAGAAA
5451 GCCAAGTTT TTATAAGCG AGCCAGGGTT ATAGTGAAGA AAATATCGCT
5501 CGTAGCCTGC CATCTTTGAA ACAAGGAAAA GTGTATGAAG ATGGTCGTCA
5551 GTGGTTCGAT TTGCGTGAAT TCAATATGGC AAAAGAAAAAT CCACTTAAAG
5601 TCACTCGCGT GCATTACGAG TTAAACCCCTA AAAACAAAAC CTCGTATTG
5651 GTAGTTGCAG GTTTTTCGCC TTTTGGCAAA ACGCGTAGCT TTGTTTCCTA
5701 TGATAATTTC GCGCAAGGG AGTTTAACTA TCAACGTGTA AGTCTAGGTT

FIG. 6H.

5751	TTGTAATGC	CAATTGACC	GGACATGATG	ATGTATTAAA	TCTAAACGCA
5801	TTGACCAATG	TAAAAGCAC	ATCAAAATCT	TATGCGGTAG	GCATAGGATA
5851	TACTTATCCG	TTTATGATA	AACACCAATC	CTTAAGTCTT	TATACCAGCA
5901	TGAGTTATGC	TGATTCTAAT	GATATCGACG	GCTTACCAAG	TGCGATTAAAT
5951	CGTAAATTAT	CAAAAGGTCA	ATCTATCTCT	GCGAATCTGA	AATGGAGTTA
6001	TTATCTCCCG	ACATTTAACC	TTGGAATGGA	AGACCAGTTT	AAAAATTAAT
6051	TAGGCTACAA	CTACCGCCAT	ATTAATCAAA	CATCCGAGTT	AAACACCCCTG
6101	GGTGCAACGA	AGAAAAAATT	TGCAGTATCA	GGCGTAAGTG	CAGGCATTGA
6151	TGGACATATC	CAATTTACCC	CTAAAACAAT	CTTTAATATT	GATTTAATC
6201	ATCATTATTA	CGCGAGTAAA	TTACCAGGCT	CTTTTGGAAT	GGAGCGCATT
6251	GGCGAAACAT	TTAATCGCAG	CTATCACATT	AGCACAGCCA	GTTTAGGGTT
6301	GAGTCAAGAG	TTTGCTCAAG	GTTGGCATT	TAGCAGTCAA	TTATCGGGTC
6351	AGTTTACTCT	ACAAGATATA	AGTAGCATAG	ATTTATTCTC	TGTAACAGGT
6401	ACTTATGGCG	TCAGAGGCTT	TAAATACGGC	GGTGCAAGTG	GTGAGCGCGG
6451	TCTTGATATG	CGTAATGAAT	TAAGTATGCC	AAAATACACC	CGCTTTCAAA
6501	TCAGCCCCTA	TGCGTTTTAT	GATGCAGGTC	AGTTCCGTTA	TAATAGCGAA
6551	AATGCTAAAA	CTTACGGCGA	AGATATGCAC	ACGGTATCCT	CTGCGGGTTT

FIG. 6I.

6601 AGGCATTAAA ACCTCTCCTA CACAAAACCTT AAGCTTAGAT GCTTTTGTG
6651 CTCGTCGCTT TGCAAATGCC AATAGTGACA ATTTGAATGG CAACAAAAAA
6701 CGCACAAAGCT CACCTACAAC CTTC TGGGGT AGATTAAACAT TCAGTTTCTA
6751 ACCCTGAAAT TTAATCAACT GGTAAGCGTT CCGCCTACCA GTTTATAACT
6801 ATATGCTTTA CCGGCCAATT TACAGTCTAT ACGCAACCCCT GTTTTCATCC
6851 TTATATATCA AACAAACTAA GCAAACCAAG CAAACCAAGC AAACCAAGCA
6901 AACCAAGCAA ACCAAGCAAA CCAAGCAAAC CAAGCAAACC AAGCAAACCA
6951 AGCAAACCAA GCAAACCAAG CAAACCAAGC AAACCAAGCA ATGCTAAAAA
7001 ACAATTTATA TGATAAACTA AAACATACTC CATACCATGG CAATACAAGG
7051 GATTTAATAA TATGACAAAA GAAAAATTAC AAAGTGTTCC ACAAATATACG
7101 ACCGCTTCAC TTGTAGAATC AAACAACGAC CAAACTTCCC TGCAAATACT
7151 TAAACAACCA CCCAAACCCA ACCTATTACG CCTGGAACAA CATGTCGCCA
7201 AAAAAGATTA TGAGCTTGCT TGCCGCGAAT TAATGGCGAT TTTGAAAAA
7251 ATGGACGCTA ATTTTGGAGG CGTTCACGAT ATTGAATTG ACGCACCTGC
7301 TCAGCTGGCA TATCTACCCG AAAAATACT AATTCATTT GCCACTCGTC
7351 TCGCTAATGC AATTACAACA CTCTTTTCCG ACCCCGAATT GGCAATTTC

FIG. 6J.

7401	GAAGAAGGG	CATTAAAGAT	GATTAGCCTG	CAACGCTGGT	TGACGCTGAT
7451	TTTTGCCTCT	TCCCCCTACG	TTAACGCAGA	CCATATTCTC	AATAAATATA
7501	ATATCAACCC	AGATTCCGAA	GGTGGCTTTC	ATTTAGCAAC	AGACAACTCT
7551	TCTATTGCTA	AATCTGTAT	TTTTTACTTA	CCCGAATCCA	ATGTCAATAT
7601	GAGTTTAGAT	GCGTTATGGG	CAGGGAATCA	ACAACTTTGT	GCTTCATTGT
7651	GTTTTGCGTT	GCAGTCTTCA	CGTTTTATTG	GTA CTGCATC	TGCGTTTCAT
7701	AAAAGAGCGG	TGGTTTTACA	GTGGTTTCCT	AAAAAACTCG	CCGAAATTGC
7751	TAATTTAGAT	GAATTGCCCTG	CAAATATCCT	TCATGATGTA	TATATGCACT
7801	GCAGTTATGA	TTTAGCAAAA	AACAAGCACG	ATGTTAAGCG	TCCATTAAAC
7851	GAAC TTGTCC	GCAAGCATA T	CCTCACGCAA	GGATGGCAAG	ACCGCTACCT
7901	TTACACCTTA	GGTAAAAAGG	ACGGCAAACC	TGTGATGATG	GTA CTGCTTG
7951	AACATTTTAA	TTTCGGGACAT	TCGATTTATC	GCACGCATTC	AACTTCAATG
8001	ATTGCTGCTC	GAGAAAAAAT	CTATTTAGTC	GGCTTAGGCC	ATGAGGGCGT
8051	TGATAACATA	GGTCGAGAAG	TGTTTGACGA	GTTCTTTGAA	ATCAGTAGCA
8101	ATAATATAAT	GGAGAGACTG	TTTTTTATCC	GTAAACAGTG	CGAAACTTTC
8151	CAACCCGCAG	TGTTCTATAT	GCCAAGCATT	GGCATGGATA	TTACCACGAT

FIG. 6K.

8201	TTTTGTGAGC	AACACTCGGC	TTGCCCCCTAT	TCAAGCTGTA	GCCTTGGGTC
8251	ATCCTGCCAC	TACGCATTCT	GAATTTATTG	ATTATGTCAT	CGTAGAAGAT
8301	GATTATGTGG	GCAGTGAAGA	TTGTTTAGC	GAAACCCCTT	TACGCTTACC
8351	CAAAGATGCC	CTACCTTATG	TACCATCTGC	ACTCGCCCCA	CAAAAAGTGG
8401	ATTATGTACT	CAGGGAAC	CCTGAAGTAG	TCAATATCGG	TATTGCCCGCT
8451	ACCACAATGA	AATTAAACCC	TGAATTTTGG	CTAACATTGC	AAGAAATCAG
8501	AGATAAAGCT	AAAGTCAAAA	TACATTTTCA	TTTCGCACCT	GGACAATCAA
8551	CAGGCTTGAC	ACACCCCTTAT	GTCAAATGGT	TTATCGAAAG	CTATTTAGGT
8601	GACGATGCCA	CTGCACATCC	CCACGCACCT	TATCACGATT	ATCTGGCAAT
8651	ATTGCGTGAT	TGCGATATGC	TACTAAATCC	GTTTCCTTTC	GGTAATACTA
8701	ACGGCATAAT	TGATATGGTT	ACATTAGGTT	TAGTTGGTGT	ATGCAAAACG
8751	GGGGATGAAG	TACATGAACA	TATTGATGAA	GGTCTGTTTA	AACGCTTAGG
8801	ACTACCAGAA	TGGCTGATAG	CCGACACACG	AGAAAACATAT	ATTGAATGTG
8851	CTTTGCGTCT	AGCAGAAAAAC	CATCAAGAAC	GCCTTGAACT	CCGTCGTTAC
8901	ATCATAGAAA	ACAACGGCTT	ACAAAAAGCTT	TTTACAGGCG	ACCCCTCGTCC
8951	ATTGGGCAAA	ATACTGCTTA	AGAAAAACAAA	TGAATGGAAG	CGGAAGCACT
9001	TGAGTAAAAA	ATAACGGTTT	TTTAAAGTAA	AAGTGCGGTT	AATTTTCAAA

FIG. 6L.

9051	GCGTTTAA	AACCTCTCAA	AAATCAACCG	CACTTTTATC	TTTATAACGC
9101	TCCCGCGCGC	TGACAGTTTA	TCTCTTTCTT	AAAATACCCA	TAAAATTGTG
9151	GCAATAGTTG	GGTAATCAAA	TTCAATTGTT	GATACGGCAA	ACTAAAGACG
9201	GCGCGTTCTT	CGGCAGTCAT	C		

FIG. 7A.

1	CGCCACTTCA	ATTTTGGATT	GTTGAAATTC	AAC TAACCAA	AAAGTGCGGT
51	TAAAAATCTGT	GGAGAAAATA	GGTTGTAGTG	AAGAACGAGG	TAATTGTTCA
101	AAAGGATAAA	GCTCTCTTAA	TTGGGCATTG	GTTGGCGTTT	CTTTTTCGGT
151	TAATAGTAAA	TTATATTCTG	GACGACTATG	CAATCCACCA	ACAAC TTAC
201	CGTTGGTTTT	AAGCGTTAAT	GTAAGTTCTT	GCTCTTCTTG	GCGAATACGT
251	AATCCCATTT	TTTGTTTAGC	AAGAAAATGA	TCGGGATAAT	CATAATAGGT
301	GTTGCCCAAA	AATAAATTTT	GATGTTCTAA	AATCATAAAT	TTTGCAAGAT
351	ATTGTGGCAA	TTCAATACCT	ATTGTGGCG	AAATCGCCAA	TTTAAATTCA
401	ATTTCTTGTA	GCATAATATT	TCCCAC TCA	ATCAACTGGT	TAAATATACA
451	AGATAAATAA	AATAAATCAA	GATTTTGTG	ATGACAAACA	ACAATTACAA
501	CACCTTTTTT	GCAGTCTATA	TGCAAAATATT	TTAAAAAAAT	AGTATAAAATC
551	CGCCATATAA	AATGGTATAA	TCTTTCATCT	TTCATCTTTC	ATCTTTCATC
601	TTTTCATCTTT	CATCTTTTCAT	CTTTCATCTT	TCATCTTTCA	TCCTTTCATCT
651	TTTCATCTTTC	ATCTTTTCATC	TTTTCATCTTT	CACATGAAAT	GATGAACCGA
701	GGGAAGGGAG	GGAGGGGCAA	GAATGAAGAG	GGAGCTGAAC	GAACGCAAAT
751	GATAAAGTAA	TTTAATTGTT	CAACTAACCT	TAGGAGAAAA	TATGAACAAG

FIG. 7B.

801 ATATATCGTC TCAAATTCAG CAAACGCCCTG AATGCTTTGG TTGCTGTGTC
851 TGAATTGGCA CGGGGTTGTG ACCATTCCAC AGAAAAAGGC AGCGAAAAAC
901 CTGCTCGCAT GAAAGTGCGT CACTTAGCGT TAAAGCCACT TTCCCGCTATG
951 TTAATACTCT TAGGTGTAAAC ATCTATTCCA CAATCTGTTT TAGCAAGCGG
1001 CAATTTAACA TCGACCAAAA TGAATGGTG CAGTTTTTAC AAGAAAAACAA
1051 GTAATAAAAC CATTATCCGC AACAGTGTTG ACGCTATCAT TAATTGGAAA
1101 CAATTTAACA TCGACCAAAA TGAAATGGTG CAGTTTTTAC AAGAAAAACAA
1151 CAACTCCGCC GTATTCAACC GTGTTACATC TAACCAAATC TCCCAATTAA
1201 AAGGGATTTT AGATTCTAAC GGACAAGTCT TTTTAAATCAA CCCAAATGGT
1251 ATCACAAATAG GTAAAGACGC AATTATTAAC ACTAATGGCT TTACGGCTTC
1301 TACGCTAGAC ATTTCTAACG AAAACATCAA GCGCGTAAT TTCACCTTCG
1351 AGCAAACCAA AGATAAAGCG CTCGCTGAAA TTGTGAATCA CGGTTTAATT
1401 ACTGTCGGTA AAGACGGCAG TGTAATCTT ATTGGTGGCA AAGTGAAAAA
1451 CGAGGGGTGT ATTAGCGTAA ATGTTGGCAG CATTTCCTTA CTCGCAGGGC
1501 AAAAAATCAC CATCAGCGAT ATAATAAACC CAACCATTA TTACAGCATT
1551 GCCGCGCCTG AAAATGAAGC GGTCAATCTG GCGATATTT TTGCCAAAGG

FIG. 7C.

1601 CGGTAACATT AATGTCCGTG CTGCCACTAT TCGAAACCAA GTAAACTTT
1651 CTGCTGATTC TGTAAGCAAA GATAAAGCG GCAATATTGT TCTTTCGCC
1701 AAAGAGGGTG AAGCGGAAAT TGGCGGTGA ATTTCCGCTC AAAATCAGCA
1751 AGCTAAAGGC GGCAAGCTGA TGATTACAGG CGATAAAGTC ACATTAAAA
1801 CAGGTGCAGT TATCGACCTT TCAGGTAAAG AAGGGGAGA AACTTACCTT
1851 GCGGTGACG AGCGCGCGA AGGTAAAAC GGCATTCAAT TAGCAAAAGAA
1901 AACCTCTTTA GAAAAAGGCT CAACCATCAA TGTATCAGGC AAAGAAAAAG
1951 GCGGACGCGC TATTGTGTG GCGATATTG CGTTAATTGA CGGCAATATT
2001 AACGCTCAAG GTAGTGGTGA TATCGCTAAA ACCGGTGGTT TTGTGGAGAC
2051 ATCGGGGCAT TATTTATCCA TTGACAGCAA TGCAATTGTT AAAACAAAAG
2101 AGTGGTTGCT AGACCCTGAT GATGTAACAA TTGAAGCCGA AGACCCCTT
2151 CGCAATAATA CCGGTATAAA TGATGAATTC CCAACAGGCA CCGGTGAAGC
2201 AAGCGACCCT AAAAAAATA GCGAACTCAA AACAAACGCTA ACCAATACAA
2251 CTATTTCAAA TTATCTGAAA AACGCCTGGA CAATGAATAT AACGGCATCA
2301 AGAAAACTTA CCGTTAATAG CTCAATCAAC ATCGGAAGCA ACTCCACTT
2351 AATTCTCCAT AGTAAAGGTC AGCGTGCGG AGGCGTTCAG ATTGATGGAG
2401 ATATTACTTC TAAAGGCGGA AATTAAACCA TTTATTCTG CGGATGGGTT

FIG. 7D.

2451 GATGTTTCATA AAAATATTAC GCTTGATCAG GGTTTTTTTAA ATATTACCGC
2501 CGCTTCCGTA GCTTTTGAAG GTGGAAATAA CAAAGCACGC GACGCGGCAA
2551 ATGCTAAAAAT TGTCGCCCCAG GGCACGTGTA CCATTACAGG AGAGGGAATA
2601 GATTCAGGG CTAACAACGT ATCTTTTAAAC GGAACGGGTA AAGGTCTGAA
2651 TATCATTTCA TCAGTGAATA ATTTAACCCA CAATCTTAGT GGCACAATTA
2701 ACATATCTGG GAATATAACA ATTAACCAAA CTACGAGAAA GAACACCTCG
2751 TATTGGCAAA CCAGCCATGA TTCGCACTGG AACGTCAGTG CTCTTAATCT
2801 AGAGACAGGC GCAAATTTTA CCTTTATTAA ATACATTTC AACAATAGCA
2851 AAGGCTTAAC AACACAGTAT AGAAGCTCTG CAGGGGTGAA TTTTAACGGC
2901 GTAAATGGCA ACATGTCATT CAATCTCAA GAAGGAGCGA AAGTTAATT
2951 CAAATTAAAA CCAAACGAGA ACATGAACAC AAGCAAACCT TTACCAATC
3001 GGTTTTTAGC CAATATCACA GCCACTGGTG GGGGCTCTGT TTTTTTTGAT
3051 ATATATGCCA ACCATTCTGG CAGAGGGCT GAGTTAAAAA TGAGTGAAAT
3101 TAATATCTCT AACGGCGCTA ATTTTACCTT AAATTCCCAT GTTCGCGGCG
3151 ATGACGCTTT TAAATCAAC AAAGACTTAA CCATAAATGC AACCAATTCA
3201 AATTTCAGCC TCAGACAGAC GAAAGATGAT TTTTATGACG GTACGCACG

FIG. 7E.

3251	CAATGCCATC	AATTCAACCT	ACAACATATC	CATTCTGGGC	GGTAATGTCA
3301	CCCTTGGTGG	ACAAAACCTCA	AGCAGCAGCA	TTACGGGGAA	TATTACTATC
3351	GAGAAAGCAG	CAAATGTTAC	GCTAGAAGCC	AATAACGCC	CTAATCAGCA
3401	AAACATAAGG	GATAGAGTTA	TAAAACCTGG	CAGCTTGCTC	GTTAATGGGA
3451	GTTTAAAGTTT	AACTGGCGAA	AATGCAGATA	TTAAAGGCAA	TCTCACTATT
3501	TCAGAAAGCG	CCACTTTTAA	AGGAAAGACT	AGAGATACCC	TAAATATCAC
3551	CGGCAATTTT	ACCAATAATG	GCACTGCCGA	AATTAATATA	ACACAAGGAG
3601	TGGTAAAACT	TGGCAATGTT	ACCAATGATG	GTGATTTAAA	CATTACCACT
3651	CACGCTAAAC	GCAACCAAAG	AAGCATCATC	GGCGGAGATA	TAATCAACAA
3701	AAAAGGAAGC	TTAAATATTA	CAGACAGTAA	TAATGATGCT	GAAATCCAAA
3751	TTGGCGGCAA	TATCTCGCAA	AAAGAAGGCA	ACCTCACGAT	TTCTTCCGAT
3801	AAAATTAATA	TCACCAAACA	GATAACAATC	AAAAAGGGTA	TTGATGGAGA
3851	GGACTCTAGT	TCAGATGCCA	CAAGTAATGC	CAACCTAACT	ATTAAAACCA
3901	AAGAATTGAA	ATTGACAGAA	GACCTAAGTA	TTTCAGGTTT	CAATAAAGCA
3951	GAGATTACAG	CCAAAGATGG	TAGAGATTTA	ACTATTGGCA	ACAGTAATGA
4001	CGGTAACAGC	GGTGCCGAAG	CCAAAACAGT	AACTTTTAAC	AATGTTAAAG

FIG. 7F.

4051 ATTCAAAAAT CTCTGCTGAC GGTCAACAATG TGACACTAAA TAGCAAAGTG
4101• AAAACATCTA GCAGCAATGG CGGACGTGAA AGCAATAGCG ACAACGATAC
4151 CGGCTTAACT ATTACTGCAA AAAATGTAGA AGTAAACAAA GATATTACTT
4201 CTCTCAAAAC AGTAAATATC ACCGCGTCGG AAAAGGTAC CACCACAGCA
4251 GGCTCGACCA TTAAACGCAAC AAATGGCAA GCAAGTATTA CAACCAAAAC
4301 AGGTGATATC AGCGGTACGA TTTCCGGTAA CACGGTAAGT GTTAGCGCGA
4351 CTGGTGATTT AACCACTAAA TCCGGCTCAA AAATTGAAGC GAAATCGGGT
4401 GAGGCTAATG TAACAAGTGC AACAGGTACA ATTGGCGGTA CAATTTCGG
4451 TAATACGGTA AATGTTACGG CAAACGCTGG CGATTTAACA GTTGGGAATG
4501 GCGCAGAAAT TAATGCGACA GAAGGAGCTG CAACCTTAAC CGCAACAGGG
4551 AATACCTTGA CTACTGAAGC CGGTTCTAGC ATCACTTCAA CTAAGGGTCA
4601 GGTAGACCTC TTGGCTCAGA ATGGTAGCAT CGCAGGAAGC ATTAATGCTG
4651 CTAATGTGAC ATTAATACT ACAGGCACCT TAACCACCGT GGCAGGCTCG
4701 GATATTAAAG CAACCAGCGG CACCTTGGTT ATTAACGCAA AAGATGCTAA
4751 GCTAAATGGT GATGCATCAG GTGATAGTAC AGAAGTGAAT GCAGTCAACG
4801 ACTGGGGATT TGGTAGTGTG ACTGCGGCAA CCTCAAGCAG TGTGAATATC
4851 ACTGGGGATT TAAACACAGT AAATGGGTTA AATATCATT CGAAAGATGG

FIG. 7G.

4901 TAGAAACACT GTGCGCTTAA GAGCAAGGA AATTGAGGTG AAATATATCC
4951 AGCCAGGTGT AGCAAGTGTA GAAGAAGTAA TTGAAGCGAA ACGCGTCCTT
5001 GAAAAAGTAA AAGATTTATC TGATGAAGAA AGAGAAACAT TAGCTAAACT
5051 TGGTGTAAGT GCTGTACGTT TTGTTGAGCC AAATAATACA ATTACAGTCA
5101 ATACACAAAA TGAATTTACA ACCAGACCGT CAAGTCAAGT GATAATTCT
5151 GAAGGTAAGG CGTGTTTCTC AAGTGGTAAT GCGGCACGAG TATGTACCAA
5201 TGTTGCTGAC GATGGACAGC CGTAGTCAGT AATTGACAAG GTAGATTCA
5251 TCCTGCAATG AAGTCATTTT ATTTTCGTAT TATTTACTGT GTGGGTAA
5301 GTTCAGTACG GGCTTTACCC ATCTTGTA
5351 AAGTATTTTT AACAGGTTAT TATTATGAAA AATATAAAAA GCAGATTAAA
5401 ACTCAGTGCA ATATCAGTAT TGCTTGGCCT GCCTTCTTCA TCATTGTATG
5451 CAGAAGAAGC GTTTTATAGTA AAAGGCTTTC AGTTATCTGG TGCACCTGAA
5501 ACTTTAAGTG AAGACGCCCA ACTGTCTGTA GCAAAATCTT TATCTAAATA
5551 CCAAGGCTCG CAAACTTTAA CAAACCTAAA AACAGCACAG CTTGAATTAC
5601 AGGCTGTGCT AGATAAGATT GAGCCAAATA AATTGATGT GATATTGCCG
5651 CAACAAACCA TTACGGATGG CAATATCATG TTTGAGCTAG TCTCGAAATC

FIG. 7H.

5701 AGCCGCAGAA AGCCAAGTTT TTTATAAGGC GAGCCAGGGT TATAGTGAAG
5751 AAAAATATCGC TCGTAGCCCTG CCATCTTTGA AACAAAGGAAA AGTGATGAA
5801 GATGGTCGTC AGTGGTTCTGA TTTGCCGTGAA TTTAATATGG CAAAAGAAAA
5851 CCCGCTTAAG GTTACCCCGTG TACATTACGA ACTAAACCCCT AAAAACAAAA
5901 CCTCTAATTT GATAATTGCG GGCTTCTCGC CTTTGGTAA AACGCGTAGC
5951 TTTAATTCTT ATGATAAATT CGGCGCGAGA GAGTTTAACT ACCAACGTGT
6001 AAGCTTGGGT TTTGTTAATG CCAATTTAAC TGGTCATGAT GATGTGTAA
6151 TTATACCAGT ATGAGTTATG CTGATTCTAA TGATATCGAC GGCTTACCAA
6201 GTGCGATTAA TCGTAAATTA TCAAAAGGTC AATCTATCTC TCGGAATCTG
6251 AAATGGAGTT ATTATCTCCC AACATTTAAC CTTGGCATGG AAGACCAATT
6301 TAAAATTAAAT TTAGGCTACA ACTACCGCCA TATTAATCAA ACCTCCGCGT
6351 TAAATCGCTT GGTGAAACG AAGAAAAAAT TTGCAGTATC AGGCGTAAGT
6401 GCAGGCATTG ATGGACATAT CCAATTTACC CCTAAAACAA TCTTTAATAT
6451 TGATTTAACT CATCATTATT ACGCGAGTAA ATTACCAGGC TCTTTTGGA
6501 TGGAGCGCAT TGGCGAAACA TTTAATCGCA GCTATCACAT TAGCACAGCC
6551 AGTTTAGGGT TGAGTCAAGA GTTTGCTCAA GGTGGCATT TTAGCAGTCA
6601 ATTATCAGGT CAATTTACTC TACAAGATAT TAGCAGTATA GATTATTCT

FIG. 7I.

6651 CTGTAACAGG TACTTATGGC GTCAGAGGCT TTAAATACGG CGGTGCAAGT
6701 GGTGAGCGCG GTCTTGATG GCGTAATGAA TTAAGTATGC CAAAATACAC
6751 CCGCTTCCAA ATCAGCCCTT ATGCGTTTAA TGATGCAGGT CAGTTCCGTT
6801 ATAATAGCGA AAATGCTAAA ACTTACGGCG AAGATATGCA CACGGTATCC
6851 TCTGCCGGTT TAGGCATTAA AACCTCTCCT ACACAAAACCT TAAGCCTAGA
6901 TGCTTTTGTT GCTCGTCGCT TTGCAAAATGC CAATAGTGAC AATTGAATG
6951 GCAACAAAAA ACGCACAAAGC TCACCTACAA CCTTCTGGGG GAGATTAAAC
7001 TTCAGTTTCT AACCTGAAA TTTAATCAAC TGGTAAGCGT TCCGCCCTACC
7051 AGTTTATAAC TATATGCTTT ACCCGCCAAT TTACAGTCTA TAGGCAACCC
7101 TGTTTTACC CTTATATATC AAATAAACAA GCTAAGCTGA GCTAAGCAAA
7151 CCAAGCAAAC TCAAGCAAGC CAAGTAATAC TAAAAAACA ATTATATGA
7201 TAAACTAAAG TATACTCCAT GCCATGGCGA TACAAGGGAT TTAATAATAT
7251 GACAAAAGAA AATTGCAAA ACGCTCCTCA AGATGCGACC GCTTACTTG
7301 CGGAATTAA GCAACAATCAA ACTCCCCCTGC GAATATTAA ACAACCACGC
7351 AAGCCCAGCC TATTACGCTT GGAACAACAT ATCGCAAAA AAGATTATGA
7401 GTTTGCTTGT CGTGAAATTAA TGGTGATTCT GGAAAAAATG GACGCTAATT

FIG. 7J.

7451 TTGGAGGCGT TCACGATATT GAATTGACG CACCCGCTCA GCTGGCATAT
7501 CTACCCGAAA AATTACTAAT TTATTTTGCC ACTCGTCTCG CTAATGCAAT
7551 TACAACACTC TTTTCCGACC CCGAATTGGC AATTCTGAA GAAGGGGCGT
7601 TAAAGATGAT TAGCCTGCAA CGCTGGTTGA CGCTGATTTT TGCCCTCTTC
7651 CCTACGTTA ACGCAGACCA TATCTCAAT AAATAATA TCAACCCAGA
7701 TTCCGAAGGT GGCTTTCATT TAGCAACAGA CAACTCTTCT ATTGCTAAAT
7751 TCTGTATTTT TTA CTTACC GAATCCAATG TCAATATGAG TTTAGATGCG
7801 TTATGGGCAG GGAATCAACA ACTTTGTGCT TCATTGTGTT TTGCGTTGCA
7851 GTCTTCACGT TTTATTGGTA CCGCATCTGC GTTTCATAAA AGAGCGGTGG
7901 TTTTACAGTG GTTTCCTAAA AAACTCGCCG AAATTGCTAA TTTAGATGAA
7951 TTGCCTGCAA ATATCCTTCA TGATGTATAT ATGCACTGCA GTTATGATTT
8001 AGCAAAAAC AAGCACGATG TTAAGCGTCC ATTAAACGAA CTTGTCCGCA
8051 AGCATATCCT CACGCAAGGA TGGCAAGACC GCTACCTTTA CACCTTAGGT
8101 AAAAAGGACG GCAAACCCTGT GATGATGGTA CTGCTTGAAC ATTTAATTC
8151 GGGACATTCTG ATTTATCGTA CACATTCAAC TTCAATGATT GCTGCTCGAG
8201 AAAAATTCTA TTTAGTCGGC TTAGGCCATG AGGCGGTGA TAAATAGGT

FIG. 7K.

8251	CGAGAAGTGT	TTGACGAGTT	CTTTGAAATC	AGTAGCAATA	ATATAATGGA
8301	GAGACTGTTT	TTTATCCGTA	AACAGTGCGA	AACTTTCCAA	CCCGCAGTGT
8351	TCTATATGCC	AAGCATTTGC	ATGGATATTA	CCACGATTTT	TGTGAGCAAC
8401	ACTCGGCTTG	CCCCTATTCA	AGCTGTAGCC	CTGGGTCATC	CTGCCACTAC
8451	GCATTCTGAA	TTTATTGATT	ATGTCATCGT	AGAAGATGAT	TATGTGGGCA
8501	GTGAAGATTG	TTTCAGCGAA	ACCCCTTTTAC	GCTTACCCAA	AGATGCCCTA
8551	CCTTATGTAC	CTTCTGCACT	CGCCCCACAA	AAAGTGGATT	ATGTACTCAG
8601	GGAAAACCCCT	GAAGTAGTCA	ATATCGGTAT	TGCCGCTACC	ACAATGAAAT
8651	TAAACCCCTGA	ATTTTGTCTA	ACATTGCAAG	AAATCAGAGA	TAAAGCTAAA
8701	GTCAAAATAC	ATTTTCATTT	CGCACTTGGA	CAATCAACAG	GCTTGACACA
8751	CCCTTATGTC	AAATGGTTTA	TCGAAAAGCTA	TTTAGGTGAC	GATGCCACTG
8801	CACATCCCCA	CGCACCTTAT	CACGATTATC	TGGCAATATT	GCGTGATTGC
8851	GATATGCTAC	TAAATCCGTT	TCCTTTCCGGT	AATACTAACG	GCATAATTGA
8901	TATGGTTACA	TTAGGTTTAG	TTGGTGTATG	CAAAACGGGG	GATGAAGTAC
8951	ATGAACATAT	TGATGAAGGT	CTGTTTAAAC	GCTTAGGACT	ACCAGAAATGG
9001	CTGATAGCCG	ACACACGAGA	AACATATATT	GAATGTGCTT	TGCGTCTAGC
9051	AGAAAACCCAT	CAAGAACGCC	TTGAACTCCG	TCGTTACATC	ATAGAAAACA

FIG. 7L.

9101	ACGGCTTACA	AAAGCTTTTT	ACAGGCGACC	CTCGTCCATT	GGC AAAATA
9151	CTGCTTAAGA	AAACAAATGA	ATGGAAGCGG	AAGCACTTGA	GTAAAAATA
9201	ACGGTTTTTT	AAAGTAAAAG	TGCGGTTAAT	TTTCAAAGCG	TTTTAAAAAC
9251	CTCTCAAAA	TCAACCGCAC	TTTTATCTTT	ATAACGATCC	CGCACGCTGA
9301	CAGTTTATCA	GCCTCCCGCC	ATAAACTCC	GCCTTTCATG	GCGGAGATT
9351	TAGCCAAAAC	TGGCAGAAAT	TAAAGGCTAA	AATCACCAAA	TTGCACCACA
9401	AAATCACCAA	TACCCACAAA	AAA		

FIG.8A

1 ATGAACAAGA TATATCGTCT CAAATTCAGC AAACGCCCTGA ATGCTTTGGT
 TCGTGTGTCT GAATTGACAC GGGGTGTGTA CCATTCCACA GAAAAAGGCA

101 GTGAAAAACC TGTTCGTACG AAAGTACGCC ACTTGGCGTT AAAGCCACTT
 TCCGCTATAT TGCTATCTTT GGGCATGGCA TCCATTCCGC AATCTGTTTT

201 AGCGAGCGGT TTACAGGGAA TGAGCGTGT ACACGGTACA GCAACCATGC
 AAGTAGACCG CAATAAAACC ACTATCCGTA ATAGCGTCAA TGCTATCATC

301 AATTGGAAC AATTTAACAT TGACCAAAAT GAAATGGTGC AGTTTTTACA
 AGAAAGCAGC AACTCTGCGG TTTTCAACCG TGTTACATCT GACCAAATCT

401 CCCAATTAAA AGGGATTTTA GATTCTAACG GACAAGTCTT TTTAATCAAC
 CCAAATGGTA TCACAATAGG TAAAGACGCA ATTATTAAACA CTAATGGCTT

501 TACTGCTTCT ACGCTAGACA TTTCTAACGA AAACATCAAG GCGCGTAATT
 TCACCCCTGA GCAAACCAAG GATAAAGCAC TCGCTGAAAT CGTGAATCAC

601 GGTTPAATTA CCGTTGGTAA AGACGGTAGC GTAAACCTTA TTGGTGGCAA
 AGTGA AAAAC GAGGGCGTGA TTAGCGTAAA TGGCGGTAGT ATTCTTTTAC

701 TTGCAGGGCA AAAAATCACC ATCAGCGATA TAATAAATCC AACCATCACT
 TACAGCAATTG CTGCACCTGA AAACGAAGCG ATCAATCTGG GCGATATTTT

B8E1G

801 TGCCAAAGGT GGTAAACATTA ATGTCCGGCG TGCCACTATT CGCAATAAAG
GTAAACTTTC TGCCGACTCT GTAAGCAAAG ATAAAAAGTGG TAACATTGTT

901 CTCTCTGCCA AAGAAGGTGA AGCGGAAATT GCGGTGTAA TTTCGGCTCA
AAATCAGCAA GCCAAAGGTG GTAAAGTTGAT GATTACAGGC GATAAAAGTTA

1001 CATTGAAAAC GGGTGCAGTT ATCGACCTTT CCGGTAAAGA AGGGGAGAA
ACTTATCTTG GCGGTGACGA GCGTGGCGAA GGTA AAAAAG GCATTCAATT

1101 AGCAAAGAAA ACCACTTTAG AAAAAAGGCTC AACAAATTAAT GTGTCAAGTA
AAGAAAAAGG TGGCGCGCGCT ATTGTATGCG GCGATATTGC GTTAAATTGAC

1201 GGCAATAATTA ATGCCCAAGG TAAAGATATC GCTAAAACTG GTGGTTTTGT
GGAGACGTGG GGGCAITACT TATCCATTGA TGATAACCGA ATTGTTAAAA

1301 CAAAAGAATG CCTACTAGAC CCAGAGAAATG TGACTATTGA AGTCCTTTCC
GCTTCTCGCG TCGAGCTGGG TGCCGATAGG AATTCCCACT CCGCAGAGGT

1401 GATAAAAGTG ACCCTAAAAA AAAATAACAC CTCCTTTGACA ACACTAACC
ATACAACCAT TTCAAAATCTT CTGAAAAAGTG CCCACGTGCT GAACATAACG

1501 GCAAGGAGAA AACTTACCGT TAATAGCTCT ATCAGTATAG AAAGAGGCTC
CCACTTAATT CTCACAGTG AAGGTCAGGG CCGTCAAGGT GTTCAGATTG

FIG.8C

1601 ATAAAGATAT TACTTCTGAA GGCGGAAATTT TAACCATTTT TTTCTGCCGA
 TCGGTTGATG TTCAATAAAA TATTACGCTT GGTAGCGGCT TTTTAAACAT

1701 CACAACTPAA GAAGGAGATA TCGCCCTTGA AGACAAAGTCT GGACGGAACA
 AOCFAACCAT TACAGCCCAA GGGACCATCA CCTCAGGTAA TAGTAACGGC

1801 TTTAGATTTA ACAACGTCTC TCTAAACAGC CTTCGGCGAA AGCTGAGCTT
 TACTGACAGC AGAGAGGACA GAGGTAGAAG AACTAAGGGT AATATCTCAA

1901 ACAAAATTGA CGGAACGTTA AACATTTCCG GAACGTGAGA TATCTCAATG
 AAAGCACCCA AAGTCAGCTG GTTTTACAGA GACAAAGGAC GCACCTACTG

2001 GAACGTAACC ACITTTAAATG TTACCCTCGG TAGTAAATTT AACCTCTCCA
 TTGACAGCAC AGGAAGTGGC TCAACAGGTC CAAGCATACG CAATGCAGAA

2101 TTAAATGGCA TAACATTTHA TAAAGCCACT TTTAATATCG CACAAGGCTC
 AACAGCTAAC TTTAGCATCA AGGCATCAAT AATGCCCTTT AAGAGTAACG

2201 CTAACCTAGC ATTATTTAAT GAAGATAITTT CAGTCTCAGG GGGGGGTAGC
 CTTAATTTCA AACTTAACGC CTCATCTAGC AACATACAAA CCCCTGGCGT

2301 AATTATAAAA TCTCAAAACT TTAATGTCTC AGGAGGGTCA ACTTTAAATC
 TCAAGGCTGA AGGTTCAACA GAAACCGCTT TTTCATAGA AAATGATTTA

FIG.8D

2401 AACTTAAACG CCACCGGTGG CAATATAACA ATCAGACAAG TCGAGGGTAC
CGATTACCGC GTCAACAAAAG GTGTCCGAGC CAAAAAAAC ATAACTTTTA

2501 AAGGGGTAA TATCACCCTC GGCCTCTCAA AAGCCACAAC AGAAATCAAA
GGCAATGTTA CCATCAATAA AAACACTAAC GCTACTCTTT GTGGTGGGAA

2601 TTTTGGCCGA AACAAATCGC CTTTAAATAT AGCAGGAAAT GTTATTAAATA
ATGGCAACCT TACCACCTGC GGTCTCCATTA TCAATATAGC CGGAAATCTT

2701 ACTGTTTCAA AAGGGGCTAA CCTTCAAGCT ATAACAATTT ACACTTTITAA
TGTAGCCGGC TCATTGTGACA ACAATGGGCG TTCAAACATT TCCATTGGCCA

2801 GAGGAGGGC TAAATTTTAA GATATCAATA ACACCAGTAG CTTTAAATATT
ACCACCAACT CTGATACCAC TTACCGCACC ATTATAAAG GCAATATATC

2901 CAACAAATCA GGTGATTTGA ATATTATTGA TAAAAAAGC GACGCTGAAA
TCCAAATTGG CGGCAATATC TCACAAAAG AAGGCAATCT CACAATTICT

3001 TCTGATAAAG TAAATATTAC CAATCAGATA ACAATCAAAG CAGGCGTTGA
AGGGGGGGT TCTGATTICAA GTGAGGCAGA AAATGCTAAC CTAACATATC

3101 AAACCAAAGA GTTAAAAATTG GCAGGAGACC TAAATATTTC AGGCTTTTAAAT
AAAGCAGAAA TTACAGCTAA AAATGGCAGT GATTTAACTA TTGGCAATGC

FIG.8E

3201 TAGCGGTGGT AATGCTGATG CTAAAAAAGT GACTTTTGAC AAGTTAAAG
ATTCAAAAAT CTCGACTGAC GGTCAACAATG TAACTACTAA TAGCGAAGTG

3301 AAAACGICTA ATGGTAGTAG CAATGCTGGT AATGATAACA GCACCGGTTT
AACCATTTC GCAAAAGATG TAAOGGTAAA CAATAACGTT ACCTCCCACA

3401 AGACAATAAA TATCTCTGCC GCAGCAGGAA ATGTAACAAC CAAAGAAGGC
ACAACTATCA ATGCAACCAC AGGCAGCGTG GAAGTAACTG CTCAAAAATGG

3501 TACAATTAAA GGCAACATTA CCTCGCAAAA TGTAACAGTG ACAGCAACAG
AAAATCTTGT TACCACAGAG AATGCTGTCA TTAATGCCAC CAGCGGCACA

3601 GTAAACATTA GTACAAAAAC AGGGATATT AAAGGTGGA TTGAATCAAC
TTCCGGTAAT GTAAATATTA CAGCGAGCGG CAATACACTT AAGGTAAAGTA

3701 ATATCACTGG TCAAGATGTA ACAGTAACAG CGGATGCAGG AGCCTTGACA
ACTACAGCAG GCTCAACCAT TAGTGGACA ACAGGCAATG CAAATATTAC

3801 AACCAACA GGTGATATCA ACGGTAAAGT TGAATCCAGC TCCGGCTCTG
TAACACTTGT TGCAACTGGA GCAACTCTTG CTGTAGGTAA TATTTCAGGT

3901 AACACTGTTA CTATTACTGC GGATAGCGGT AAATTAACTT CCACAGTAGG
TTCTACAATT AATGGGACTA ATAGTGTAC CACCTCAAGC CAATCAGCGG

FIG.8F

4001 ATATTGAAGG TACAATTITCT GGTAATACAG TAAATGTTAC AGCAAGCACT
GGTGATTTAA CTATTGGAAA TAGTGCAAAA GTTGAAGCGA AAAATGGAGC

4101 TGCAACCTTA ACTGCTGAAT CAGGCAAATT AACCACCCAA ACAGGCTCTA
GCATTACCTC AAGCAATGGT CAGACAACTC TTACAGCCAA GGATAGCAGT

4201 ATCGCAGGAA ACATTAAATG TCCTAATGTG ACGTTAAATA CCACAGGCAC
TTTAACTACT ACAGGGGATT CAAAGATTAA CGCAACCAGT GGTACCTTAA

4301 CAATCAATGC AAAAGATGCC AAATTAGATG GTGCTGCATC AGGTACCCG
ACAGTAGTAA ATCCAACTAA CGCAAGTGGC TCTGGTTAAG TCACTGGGAA

4401 AACCTCAAGC AGCGTGAATA TCACCGGGGA TTTAAACACA ATAAATGGGT
TAAATATCAT TTCCGAAAAT GGTAGAAAACA CTGTGGGCTT AAGAGCGAAG

4501 GAAATTGATG TGAAATATAT CCAACCAGGT GTAGCAAGCG TAGAAGAGGT
AATTGAAGCG AAACGGCTCC TTGAGAAGGT AAAAGATTTA TCTGATGAAG

4601 AAAGAGAAC ACTAGCCAAA CTGGTGTA GTCGTGTAGG TTTCGTTGAG
CCAAATAATG CCATTACGGT TAATACACAA AACGAGTTTA CAACCAACC

4701 ATCAAGTCAA GTGACAATTT CTGAAGGTAA GCGGTGTTTC TCAAGTGGTA
ATGGCGCAGG AGTATGTACC AATGTTGCTG ACGATGGACA GCAG

FIG.9A

1 ATGAACAAGA TATATCGTCT CAAATTCAGC AAACGCCCTGA ATGCTTTGGT
TGCTGTGTCT GAATTGACAC GGGGTGTGTA CCATTCCACA GAAAAAGGCA
101 GTGAAAAACC TGTTCTGTAG AAAGTAGGCC ACTTGGCGTT AAAGCCACTT
TCCGCTATAT TGCTATCTTT GGGCATGGCA TCCATTCCGC AATCTGTTTT
201 AGCGAGCGGT TTACAGGGAA TGAGCGTCTG ACACGGTACA GCAACCATGC
AAGTAGACGG CAATAAAACC ACTATCCGTA ATAGCGTCAA TGCTATCATC
301 AATTGGAAAC AATTTAACAT TGACCAAAAT GAAATGGTGC AGTTTTTACA
AGAAAGCAGC AACTCTGCGG TTTTCAACCG TGTTACATCT GACCAAATCT
401 CCCAATTAAA AGGATTTTA GATTCTAAG GACAAGTCTT TTTAATCAAC
CCAAATGGTA TCACAATAGG TAAAGACCCA ATTATTAACA CTAATGGCTT
501 TACTGCTTCT ACGCTAGACA TTCTTAACGA AAACATCAAG GCGGTAAT
TCACCCCTTGA GCAAAACCAAG GATAAAGCAC TCGCTGAAAT CGTGAATCAC
601 GGTTTAATTA CCGTTGGTAA AGACGGTAGC GTAAACCTTA TTGGTGGCAA
AGTGAAAAAC GAGGCGTGA TTAGCGTAAA TGGCGGTAGT ATTCTTTAC
701 TTGCAGGGCA AAAAATCACC ATCAGCGATA TAAATAATCC AACCATCACT
TACAGCATTG CTGCACCTGA AAACGAAGCG ATCAATCTCG GCGATATTTT

FIG.9B

801 TGCCAAAGGT GGTAACATTA ATGTCCGGC TCCCACTATT CGCAATAAAG
 GTAAACITTC TGCCGACTCT GTAAGCAAAG ATAAAGTGG TAACATTGTT

901 CTCCTGCCA AAGAAGGTGA AGCGGAATT GGCGGTGTAA TTTCCGCTCA
 AAATCAGCAA GCCAAAGGTG GTAAGTTGAT GATTACAGGT GATAAAGTCA

1001 CATTAAAAC AGGTCCAGTT ATCGACCTTT CAGGTAAAGA AGCGGAGAG
 ACTTATCTTG GCGGTGATGA GCGTGGCGAA GGTA AAAATG GTATTCAATT

1101 AGCGAAGAA ACCTCTTTAG AAAAAGGCTC GACAATTAAT GTATCAGGA
 AAAAAAAG CGGCGCGCT ATTGTATGG GCGATATTGC ATTAATTAAT

1201 GGTAACATTA ATGCTCAAG TAGCGATATT GCTAAAACTG GCGGCTTTGT
 GGAAACATCA GGACATGACT TATCCATHGG TGATGATGTG ATTGTGACG

1301 CTAAAGAGTG GTTATTAGAC CCAGATGATG TGTCATTTGA AACTCTTACA
 TCTGGACCGA ATAATACCGG CGAAAACCAA GGATATACAA CAGGAGATGG

1401 GACTAAAGAG TCACCTAAAG GTAATAGTAT TTCTAAACCT ACATTAACAA
 ACTCAACTCT TGAGCAAATC CTAAGAAGAG GTTCTTATGT TAATATCACT

501 GCTAATAATA GAATTATGT TAATAGCTCC ATCAACTTAT CTAATGGCAG
 TTTAACACTT CACACTAAAC GAGATGGAGT TAAAAATTAAC GGTGATATTA

FIG.9C

1601 CCTCAAAACGA AAATGGTAAT TTAACCATTA AAGCAGGCTC TTGGGTGAT
 GTTCATAAAA ACATCACCCT TGGTACGGGT TTTTGAATA TTGTGGCTCG

1701 GGATTCTGTG GCTTTTGAGA GAGAGGGCGA TAAAGCACGT AACGCAACAG
 ATGCTCAAAT TACCGCACAA GGGACGATAA CCGTCAATAA AGATGATAAA

1801 CAATTTAGAT TCAATAATGT ATCTATTAAAC GGGACGGCGA AGGTTTAAA
 GTTTATTGCA AATCAAAAATA ATTTCACCTA TAAATTGTAT GCGCAAAATTA

1901 ACATATCTCG AATAGTAACA ATTAAACCAA CCACGAAAAA AGATGTTAAA
 TACTGGAATG CATCAAAAGA CTCTTACTGG AATGTTTCTT CTCTTACTTT

2001 GAATACGGTG CAAAAATTTA CCTTTTATAA ATTGTTTGTAT AGCGGCTCAA
 ATTCCCAAGA TTTGAGGTCA TCACGTAGAA GTTTTGCAGG CGTACATTTT

2101 AACGGCATCG GAGCAAAAC AAACITCAAC ATCGGAGCTA ACCCAAAAGC
 CTTATTTTAA TTAACCAACAA ACGCGCTAC AGACCCAAA AAAGAATTAC

2201 CTATTACTTT TAACGCCAAC ATTACAGCTA CCGGTAACAG TGATAGCTCT
 GTGATGTTTG ACATACACGC CAATCTTACC TCTAGAGCTG CCGGCATAAA

2301 CATGGATTCA ATTACATTA CCGCGGGGCT TGACTTTTTC ATAACATCCC
 ATAATCGCAA TAGTAATGCT TTTGAAATCA AAAAGACCTT AACTATAAAT

[illegible]

54/82

55/82

3301 AGCGAAGTGA AAACGCTCTAA TGGTAGTAGC AATGCTGGTA ATGATAACAG
CACCGGTGTTA ACCATTTCGG CAAAAGATGT AACGGTAAAC AATAACGTTA

3401 CCTCCCACAA GACAATAAAT ATCTCTGCCG CAGCAGGAAA TGTAACAACC
AAAGAAGGCA CAACTATCAA TGCAACCACA GGCAGCGTGG AAGTAACTGC

3501 TCAAAATGGT ACAATTAAAG GCAACATTAC CTGCGAAAAT GTAACAGTGA
CAGCAACAGA AAATCTTGTT ACCACAGAGA ATGCTGTGAT TAATGCAACC

3601 AGCGGCACAG TAAACATTAG TACAAAAACA GCGGATATTG AAGGTGGAAT
TGAATCAACT TCCGGTAATG TAAATATTAC AGCGAGCGGC AATACACTTA

3701 AGGTAAGTAA TATCACTGGT CAAGATGTAA CAGTAACAGC GGATGCAGGA
GCCTTGACAA CTACAGCAGG CTCAACCATTT AGTCCGACAA CAGGCAATGC

3801 AAATATTACA ACCAAAACAG GTGATATCAA CCGTAAAGTT GAATCCAGCT
CCGGCTCTGT AACACTTGTT GCAACTGGAG CAACTCTTGC TGTAGGTAAT

3901 ATTTCAGGTA ACACTGTTAC TATTACTGGG GATAGCGGTA AATTAACCTC
CACAGTAGGT TCTACAATTA ATGGGACTAA TAGTGTAAAC ACCTCAAGCC

001 AATCAGGCGA TATTGAAGGT ACAATTTCGT GTAATACAGT AAATGTTACA
GCAAGCACTG GTGATTTAAC TATTGGAAAT AGTCGAAAAG TTGAAGCGAA

FIG.9F

4101 AAATGGAGCT GCAACCTTAA CTGCTGAATC AGGCAAATTA ACCACCCAAA
CAGGCTCTAG CATTACCTCA AGCAATGGTC AGACAACCTCT TACAGCCAAG

4201 GATAGCAGTA TCGCAGGAAA CATTAAATGCT GCTAATGTGA CGTTAAATAC
CACAGGCACT TTAACCTACTA CAGGGGATTC AAAGATTAAAC GCAACCAGTG

4301 GTACCTTAAAC AATCAATGCA AAAGATGCCA AATTAGATGG TGCTGCATCA
GGTCACCGCA CAGTAGTAAA TGCAACTAAC GCAAGTGGCT CTGGTAACGT

4401 GACTGCGAAA ACCTCAAGCA GCGTGAATAT CACCGGGGAT TTAAACACAA
TAAATGGGTT AAATATCATTT TCGGAAAATG GTAGAAACAC TGTGCGCTTA

501 AGAGGCAAGG AATTGATGT GAAATATATC CAACCAGGTG TAGCAAGCGT
AGAAGAGGTA ATTGAAGCGA AACCGGTTCCT TGAGAAAGTA AAAGATTTAT

601 CTGATGAAGA AAGAGAAACA CTAGCCAAAC TTGGTGTAG TGCTGTACGT
TTTGTTGAGC CAAATAATGC CATTACGGTT AATACACAAA ACGAGTTTAC

701 AACCAAACCA TCAAGTCAAG TGACAATTTC TGAAGGTAAG CCGTGTTTCT
CAAGTGGTAA TGGCGCACGA GTATGTACCA ATGTTCTTGA CGATGGACAG

101 CAG

FIG.10A

COMPARISON OF DERIVED AMINO ACID SEQUENCE

	1					50
Hmw3com	MNKIYRLKFS	KRLNALVAVS	ELTRGCDHST	EKGSEKPVRT	KVRHLALKPL	
Hmw4com	MNKIYRLKFS	KRLNALVAVS	ELTRGCDHST	EKGSEKPVRT	KVRHLALKPL	
Hmw1com	MNKIYRLKFS	KRLNALVAVS	ELTRGCDHST	EKGSEKPVRT	KVRHLALKPL	
Hmw2com	MNKIYRLKFS	KRLNALVAVS	ELTRGCDHST	EKGSEKPVRT	KVRHLALKPL	57/82
	51					100
Hmw3com	SAILLSLGMA	SIPQSVLASG	LQGMVSVHGT	ATMQVDGNKT	TIRNSVNAIL	
Hmw4com	SAILLSLGMA	SIPQSVLASG	LQGMVSVHGT	ATMQVDGNKT	TIRNSVNAIL	
Hmw2com	SAMILLSLGVT	SIPQSVLASG	LQGMVSVHGT	ATMQVDGNKT	TIRNSVNAIL	
Hmw2com	SAMILLSLGVT	SIPQSVLASG	LQGMVSVHGT	ATMQVDGNKT	TIRNSVNAIL	

FIG.10B

Htrw3com	101	NWKQFNIDQN	EMEQFLQESS	NSAVFNRVTS	DQISQLKSIL	150	DSNSQVFLIN
Htrw4com		NWKQFNIDQN	EMEQFLQESS	NSAVFNRVTS	DQISQLKGIL		DSNSQVFLIN
Htrw1com		NWKQFNIDQN	EMVQFLQENN	NSAVFNRVTS	NQISQLKGIL		DSNSQVFLIN
Htrw2com		NWKQFNIDQN	EMVQFLQENN	NSAVFNRVTS	NQISQLKGIL		DSNSQVFLIN
						58/82	
Htrw3com	151	PNGITIGKDA	IINTNSFTAS	TLDISNENIK	ARNFTLEQTK	200	DKALAEIVNH
Htrw4com		PNGITIGKDA	IINTNSFTAS	TLDISNENIK	ARNFTLEQTK		DKALAEIVNH
Htrw1com		PNGITIGKDA	IINTNSFTAS	TLDISNENIK	ARNFTLEQTK		DKALAEIVNH
Htrw2com		PNGITIGKDA	IINTNSFTAS	TLDISNENIK	ARNFTLEQTK		DKALAEIVNH

FIG.10C

Htrw3com	201	GLITVCKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT	250	ISDIINPTIT
Htrw4com		GLITVCKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT		ISDIINPTIT
Htrw1com		GLITVCKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT		ISDIINPTIT
Htrw2com		GLITVCKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT	59/82	ISDIINPTIT
Htrw3com	251	YSIAAPENEA	INLGDIFAKG	GNINVRAATI	RNKGKLSADS	300	VSKDKSGNIV

FIG. 10D.

Hmw4 com	YSIAAPENEA	INLGDIFAKG	GNINVRAATI	RNKGKLSADS	VSKDKSGNIV	
Hmw1 com	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNKGKLSADS	VSKDKSGNIV	
Hmw2 com	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNKGKLSADS	VSKDKSGNIV	
						301
Hmw3 com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE	350
Hmw4 com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE	
Hmw1 com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE	60/82
Hmw2 com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE	
						351
Hmw3 com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IVWGDIALID	400
Hmw4 com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IVWGDIALID	
Hmw1 com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IVWGDIALID	
Hmw2 com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IVWGDIALID	

FIG. 10E.

	401		450
Hmw3 com	GNINAQ GK.D	IAKTGGFVET	SGHYLSIDDN AIVKTKEWLL DPENVTIEAP
Hmw4 com	GNINAQ GS.D	IAKTGGFVET	SGHDL SIGDD VIVDAKEWLL DPDDVSIETL
Hmw1 com	GNINAQ GSGD	IAKTGGFVET	SGHDLFIKDN AIVDAKEWLL DPDNV TinaE
Hmw2 com	GNINAQ GSGD	IAKTGGFVET	SGHYLSIESN AIVKTKEWLL DPDDV TIEAE
	451		500
Hmw3 com	SASRVELGAD	RNSHSAEVIK	VTLKKNNTSL TTLTNTTISN LLKSAHV VNI
Hmw4 com	TSGRNNTGEN	QGYTTGDG TK	ESPKGNSISK PTLTNSTLEQ ILRRGSYVNI
Hmw1 com	TAGRSNTSED	DEYTGSGNSA	STPKRNKE.K TTLTNTTLES ILKKGTFVNI
Hmw2 com	DPLRNNTGIN	DEFPTGTGEA	SDPKKNSELK TTLTNTTISN YLKNAWTMNI
	501		550
Hmw3 com	TARRKLT VNS	SISIERGSHL	ILHSEGQGGQ GVQIDKDITS .E...GGNLT
Hmw4 com	TANNRIYVNS	SINLSNGS.L	TLHTK...RD GVKINGDITS NE...NGNLT
Hmw1 com	TANQRIYVNS	SINL.SNGSL	TLWSEGRSGG GVEINNDITT GDDTRGANLT
Hmw2 com	TASRKLT VNS	SINGSNGSHL	ILHSGQQRGG GVQIDGDIT. ...SKG NLT

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FIG. 10F.

	551		600
Hmw3 com	IYSGGWVDVH	KNITLGS.GF	LNITTKEDI AFEDKSGR... ..NNLTITAQ
Hmw4 com	IKAGSWVDVH	KNITLGT.GF	LNIVAGDS.V AFEREGDKAR NATDAQITAQ
Hmw1 com	IYSGGWVDVH	KNISLGAQGN	INITAKQD.I AFEKGSNQV. ....ITGQ
Hmw2 com	IYSGGWVDVH	KNITLD.QGF	LNITA.AS.V AFEGGNNKAR DANNLTITAQ
	601		650
Hmw3 com	GTITSG.NSN	GFRFNNVSLN	SLGGKLSFTD SREDRGRRTK GNISNKFDGT
Hmw4 com	GTITVKNKDDK	QFRFNNVSIN	GTGKGLKFIA NQN..... .NFTHKFDGE
Hmw1 com	GTIT.SGNQK	GFRFNNVSLN	GTGSGLQFTT KRTN.....K YAITNKFEGT
Hmw2 com	GTVTITGEGK	DFRANNVSLN	GTGKGLNIIS SVNN..... .LTHNLSGT
	651		700
Hmw3 com	LNISGTVDIS	MKAPKVSWFY	RD.KGRTYWN VTTLNVTSGS KFNLSIDSTG
Hmw4 com	INISGIVTIN	QTTKKDKVKYW	NA.SKDSYWN VSSLTLNTVQ KFTF.IKFVD
Hmw1 com	LNISGKVNIS	MVLPKNESGY	DKFKGRTYWN LTSLNVSESG EFNLTIDSRG

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FIG. 10G.

Hmw2com INISGNITIN QTRKNTSYW QTSHD.SHWN VSALNLETGA NTFI.IKYIS

701 750

Hmw3com SGSTG...PS IRNA...ELNG ITFN...KA TFNIAQGSTA NFSIKASIMP

Hmw4com SGSNS...QD LRSSRRSFAG VHFNGIGGKT NFNIGANAKA LFKLKPNAAT

Hmw1com SDSAGTLTQ.PYNLNG ISFN...KDT TFNVERNARV NFDIKAPIGI

Hmw2com SNSKGLTTQY RSSAGVNFNG V..N..GNM SFNLKEGAKV NFKLKPENNM

751 800 63/82

Hmw3com FKSANYAL. FNEDISVSG. .GGSVNFKLN ASSSNIQTPG VIKSQNFNV

Hmw4com DPKKELPIT. FNANITATGN SDSSVMFDIH A...NLTSRA AGINMDSINI

Hmw1com NKYSSLNYAS FNGNISVSG. .GGSVDFTL ASSSNVQTPG VVINSKYFNV

Hmw2com NTSKPLPI.R FLANITATG. .GGSVFFDIY ANHS...GRG AELKMSEINI

801 850

Hmw3com SGGSTLNLKA EGSTETAFSI ENDLNLNATG GNITIRQVEG T..DSRVNKG

Hmw4com TGGLDFSITS HNRNSNAFEI KKDLTINATG SNFSLKQTKD SFYNEYSKHA

FIG. 10H.

Hmw1com	STGSSLRFKT	SGSTKTGFSI	EKDLTLNATG	GNITLLQVEG	T..DGMIGKG
Hmw2com	SNGANFTLNS	HVRGDDAFKI	NKDLTINATN	SNFSLRQTKD	DFYDGYARNA
	851				900
Hmw3com	VAAKKNITFK	GGNITFGSQK	ATTEIKGNVT	INKNTNATLR	GANFAEN...
Hmw4com	INSSHNLTIL	GGNVTLGGEN	SSSITGNIN	ITNKANVTLQ	ADTSNSNTGL
Hmw1com	IVAKKNITFE	GGNITFGSRK	AVTEIEGNVT	INNANANVTLI	GSDFDNHQ...
Hmw2com	INSTYNISIL	GGNVTLGGQN	SSSITGNIT	IEKAANVTLE	ANNAPNQQNI
	901				950
Hmw3com	KSPLNIAGNV	INNGNLTTAG	SIINIAGNLT	VSKGANLQAI	TNYTFNVAGS
Hmw4com	KKRTLTLGNI	SVEGNLSLTG	ANANIVGNLS	IAEDSTFKGE	ASDNLNITGT
Hmw1com	KPLTIKKDVI	INSGNLTAGG	NIVNIAGNLT	VESNANFKAI	TNFTFNVGGL
Hmw2com	RDRVIKLGSL	LVNGSLSLTG	ENADIKGNLT	ISESATFKGK	TRDTLNLITGN
	951				1000

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FIG. 10I.

Hmw3 com	FDNNGASNIS	IARGGAKFK.	DINNTSSLNI	TTNSDTTYRT	IIKGNISNKS	
Hmw4 com	FTNNGTANIN	IKQGVVKLQG	DINNKGGLNI	TTNASGTQKT	IINGNITNEK	
Hmw1 com	FDNKGNSNIS	IAKGGARFK.	DIDNSKNLSI	TTNSSSTYRT	IISGNITNKN	
Hmw2 com	FTNNGTAEIN	ITQGVVKLG.	NVTNDGDLNI	TTHAKRNQRS	IIGGDIINN	
						1050
Hmw3 com	GDLNIIDKKS	DAEIQIGGNI	SQKEGNLTIS	SDKVNITNQI	TIKAGVEGGR	
Hmw4 com	GDLNIKNIKA	DAEIQIGGNI	SQKEGNLTIS	SDKVNITNQI	TIKAGVEGGR	65/82
Hmw1 com	GDLNITNEGS	DTEMQIGGDI	SQKEGNLTIS	SDKINITKQI	TIKAGVDGEN	
Hmw2 com	GSLNITDSNN	DAEIQIGGNI	SQKEGNLTIS	SDKINITKQI	TIKKGIDGED	
						1100
Hmw3 com	SDSSEAENAN	LTIQTKELKL	AGDLNISGFN	KAELITAKNGS	DLTIGNASGG	
Hmw4 com	SDSSEAENAN	LTIQTKELKL	AGDLNISGFN	KAELITAKNGS	DLTIGNASGG	
Hmw1 com	SDSDATNNAN	LTIKTKELKL	TQDLNISGFN	KAELITAKDGS	DLTIGNTNSA	
Hmw2 com	SSSDATSNAN	LTIKTKELKL	TEDLSISGFN	KAELITAKDGR	DLTIGNSNDG	

FIG. 10J.

	1101				1150
Hmw3 com	N..ADAKKVT	FDKVKDSKIS	TDGHNVTLS	EVKT..SNGS	SNAGNDNSTG
Hmw4 com	N..ADAKKVT	FDKVKDSKIS	TDGHNVTLS	EVKT..SNGS	SNAGNDNSTG
Hmw1 com	D.GTNAKKVT	FNQVKDSKIS	ADGHKVTLS	KVETSGSNNN	TEDSSDNNAG
Hmw2 com	NSGAEAKKVT	FNNVKDSKIS	ADGHNVTLS	KVKTSSSNGG	RESNSDNDTG
	1151				1200
Hmw3 com	LTISAKDVTV	NNNVTSHKTI	NISAAAGNVT	TKEGTTINAT	TGSVEVTAQN
Hmw4 com	LTISAKDVTV	NNNVTSHKTI	NISAAAGNVT	TKEGTTINAT	TGSVEVTAQN
Hmw1 com	LTIDAKNVTV	NNNITSHKAV	SISATSGEIT	TKTGTTINAT	TGNVEIT...
Hmw2 com	LTITAKNVEV	NKDVTSLKTV	NITA.SEKVT	TTAGSTINAT	NGKASIT...
	1201				1250
Hmw3 com	GTIKGNITSQ	NVTVTATENL	VTTENAVINA	TSGTVNISTK	TGDIKGGIES
Hmw4 com	GTIKGNITSQ	NVTVTATENL	VTTENAVINA	TSGTVNISTK	TGDIKGGIES
Hmw1 comAQ	TGDIKGGIES

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FIG. 10K.

Hmw2com	TK	T
	1251					1300
Hmw3com	TSGNVNITAS	GNTLKVSNIT	GQDVTVTADA	GALTTTAGST	ISATTGNANI	
Hmw4com	TSGNVNITAS	GNTLKVSNIT	GQDVTVTADA	GALTTTAGST	ISATTGNANI	
Hmw1com	SSGSVTLTAT	EGALAVSNIS	GNTVTVTANS	GALTTLAGST	IKG.TESVTT	
Hmw2com	.....	.....	.....	.....	.....
	1301					1350
Hmw3com	TTKTGDINGK	VESSSGSVTL	VATGATLAVG	NISGNTVTVTIT	ADSGKLTSTV	
Hmw4com	TTKTGDINGK	VESSSGSVTL	VATGATLAVG	NISGNTVTVTIT	ADSGKLTSTV	
Hmw1com	SSQSGDIG..	.....	.....G	TISGGTVEVK	ATESLTTQSN	
Hmw2com	....GDIS..	.....	.....G	TISGNTVSVS	ATVDLTTKSG	
	1351					1400
Hmw3com	GSTINGTNSV	TTSSQSGDIE	GTISGNTVNV	TASTGDLTIG	NSAKVEAKNG	
Hmw4com	GSTINGTNSV	TTSSQSGDIE	GTISGNTVNV	TASTGDLTIG	NSAKVEAKNG	

FIG. 10L.

Hmw1com	SKIKATTGEA	NVTSATGTIG	GTISGNTVNV	TANAGDLTVG	NGAEINATEG	
Hmw2com	SKIEAKSGEA	NVTSATGTIG	GTISGNTVNV	TANAGDLTVG	NGAEINATEG	
	1401					1450
Hmw3com	AATLTAESGK	LTTQTGSSIT	SSNGQTTLLTA	KDSSIAGNIN	AANVTLNTTG	
Hmw4com	AATLTAESGK	LTTQTGSSIT	SSNGQTTLLTA	KDSSIAGNIN	AANVTLNTTG	
Hmw1com	AATLTTSSGK	LTTEASSHIT	SAKGQVNLSA	QDSSVAGSIN	AANVTLNTTG	68/82
Hmw2com	AATLTATGNT	LTTEAGSSIT	STKGQVDLLA	QNSSIAGNIN	AANVTLNTTG	
	1451					1500
Hmw3com	TLTTTGDSKI	NATSGTLTIN	AKDAKLDGAA	SGDRTVVNAT	NASGSGNVTA	
Hmw4com	TLTTTGDSKI	NATSGTLTIN	AKDAKLDGAA	SGDRTVVNAT	NASGSGNVTA	
Hmw1com	TLTTVKGSNI	NATSGTLTIN	AKDAELNGAA	LGNHTVVNAT	NANGSGSVIA	
Hmw2com	TLTTVAGSDI	KATSGTLTIN	AKDAKLNGBA	SGDSTEVNAV	NASGSGSVTA	
	1501					1550

FIG. 10M.

Hmw3com	KTSSSVNITG	DLNTINGLNI	ISENGRNTVR	LRGKEIDVKY	IQPGVASVEE
Hmw4com	KTSSSVNITG	DLNTINGLNI	ISENGRNTVR	LRGKEIDVKY	IQPGVASVEE
Hmw1com	TTSSRVNITG	DLITINGLNI	ISKNGINTVL	LKGVKIDVKY	IQPGIASVDE
Hmw2com	ATSSSVNITG	DLNTVNGLNI	ISKDGRNTVR	LRGKEIEVKY	IQPGVASVEE

1551

1600

Hmw3com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNAIT	VNTQNEFTTK
Hmw4com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNAIT	VNTQNEFTTK
Hmw1com	VIEAKRILEK	VKDLSDEERE	ALAKLGVS AV	RFIEPNNTIT	VDTQNEFATR
Hmw2com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNTIT	VNTQNEFTTR

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1601

1632

Hmw3com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QQ	(SEQ ID No: 9)
Hmw4com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QQ	(SEQ ID No: 10)
Hmw1com	PLSRIVISEG	RACFSNSDGA	TVCVNIADNG	R.	(SEQ ID No: 2)
Hmw2com	PSSQVIISEG	KACFSSGNGA	RVCTNVADDG	QP	(SEQ ID No: 4)

2

FIG. 10M.

Hmw3 com	KTSSSVNITG	DLNTINGLNI	ISENGRNTVR	LRGKEIDVKY	IQPGVASVEE	
Hmw4 com	KTSSSVNITG	DLNTINGLNI	ISENGRNTVR	LRGKEIDVKY	IQPGVASVEE	
Hmw1 com	TTSSRVNITG	DLITINGLNI	ISKNGINTVL	LKGVKIDVKY	IQPGIASVDE	
Hmw2 com	ATSSSVNITG	DLNTVNGLNI	ISKDGRNTVR	LRGKEIEVKY	IQPGVASVEE	
						1551
Hmw3 com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNAIT	VNTQNEFTTK	1600
Hmw4 com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNAIT	VNTQNEFTTK	
Hmw1 com	VIEAKRILEK	VKDLSDEERE	ALAKLGVS AV	RFIEPNNTIT	VDTQNEFFATR	
Hmw2 com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNTIT	VNTQNEFTTR	
						1601
Hmw3 com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QQ		1632
Hmw4 com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QQ		
Hmw1 com	PLSRIVISEG	RACFSNSDGA	TVCVNIADNG	R.		
Hmw2 com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QP		

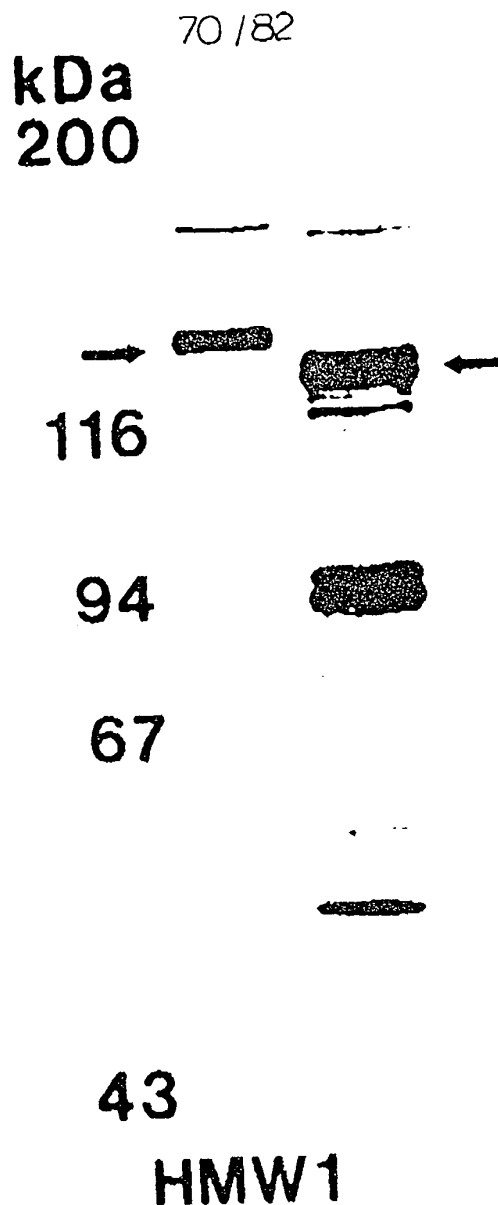


FIG. 11

WESTERN IMMUNOBLOT ASSAY OF PHAGE
LYSATES CONTAINING EITHER THE HMW1
OR HMW2 RECOMBINANT PROTEINS.
LYSATES WERE PROBED WITH AN *E. COLI*-
ABSORBED ADULT SERUM SAMPLE WITH
HIGH-TITER ANTIBODY AGAINST
HIGH-MOLECULAR-WEIGHT PROTEINS. THE
ARROWS INDICATE THE MAJOR
IMMUNOREACTIVE PROTEIN BANDS OF 125 AND
120 kDa IN THE HMW1 AND HMW2 LYSATES,
RESPECTIVELY.

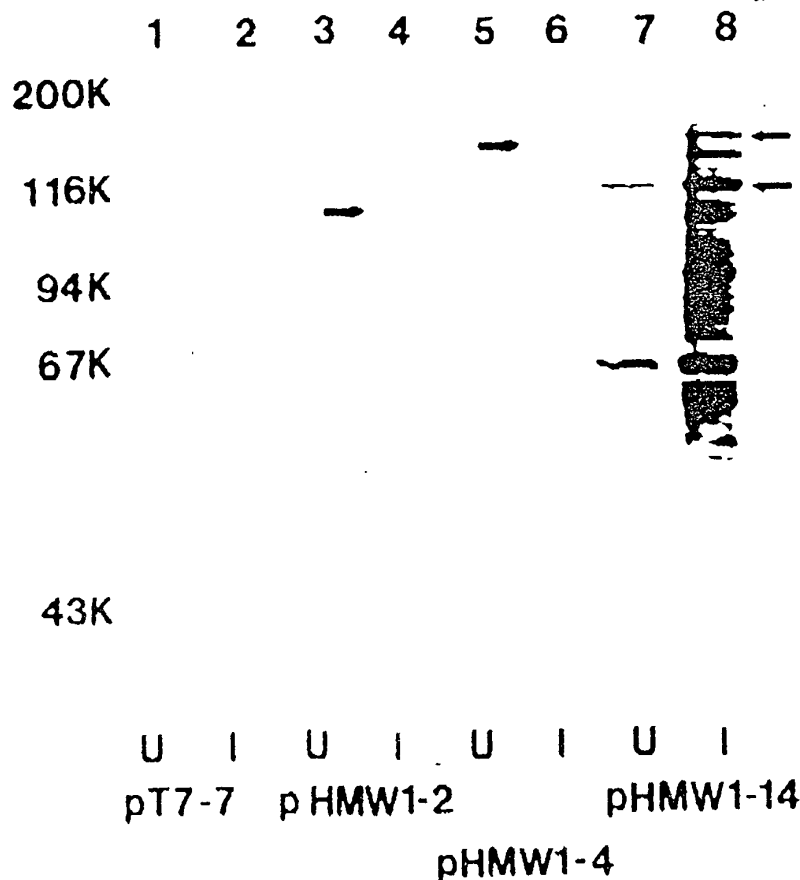


FIG. 12

WESTERN IMMUNOBLOT ASSAY OF CELL SONICATES PREPARED FROM *E. COLI* TRANSFORMED WITH PLASMID pT7-7 (LANES 1 AND 2) pHMW1-2 (LANES 3 AND 4), pHMW1-4 (LANES 5 AND 6), OR pHMW1-14 (LANES 7 AND 8). THE SONICATES WERE PROBED WITH AN *E. COLI*-ABSORBED ADULT SERUM SAMPLE WITH HIGH -TITER ANTIBODY AGAINST HIGH - MOLECULAR -WEIGHT PROTEINS. LANES LABELED U AND I REPRESENT SONICATES PREPARED BEFORE AND AFTER INDUCTION OF THE GROWING SAMPLES WITH IPTG, RESPECTIVELY. THE ARROWS INDICATE PROTEIN BANDS OF INTEREST AS DESCRIBED IN THE TEXT.

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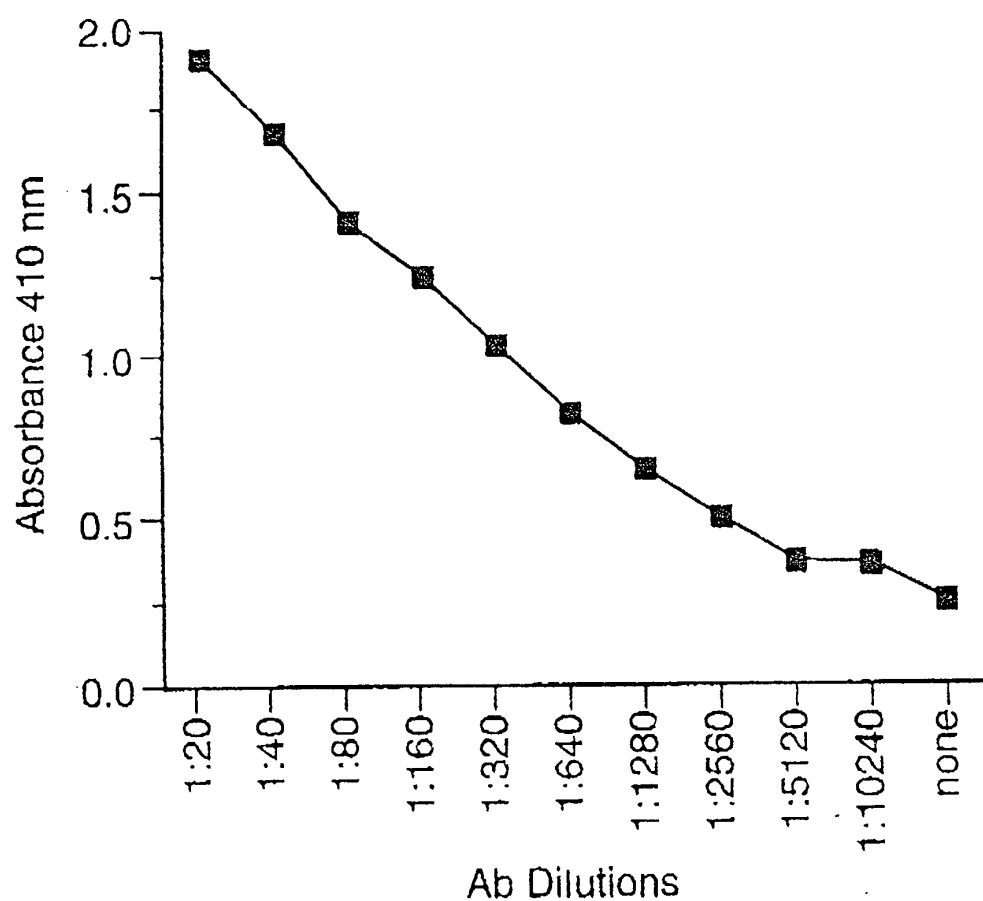


FIG. 13

ELISA WITH rHMW1 ANTISERUM ASSAYED AGAINST PURIFIED
FILAMENTOUS HEMAGGLUTININ OF *B. PERTUSSIS*. Ab, ANTIBODY.

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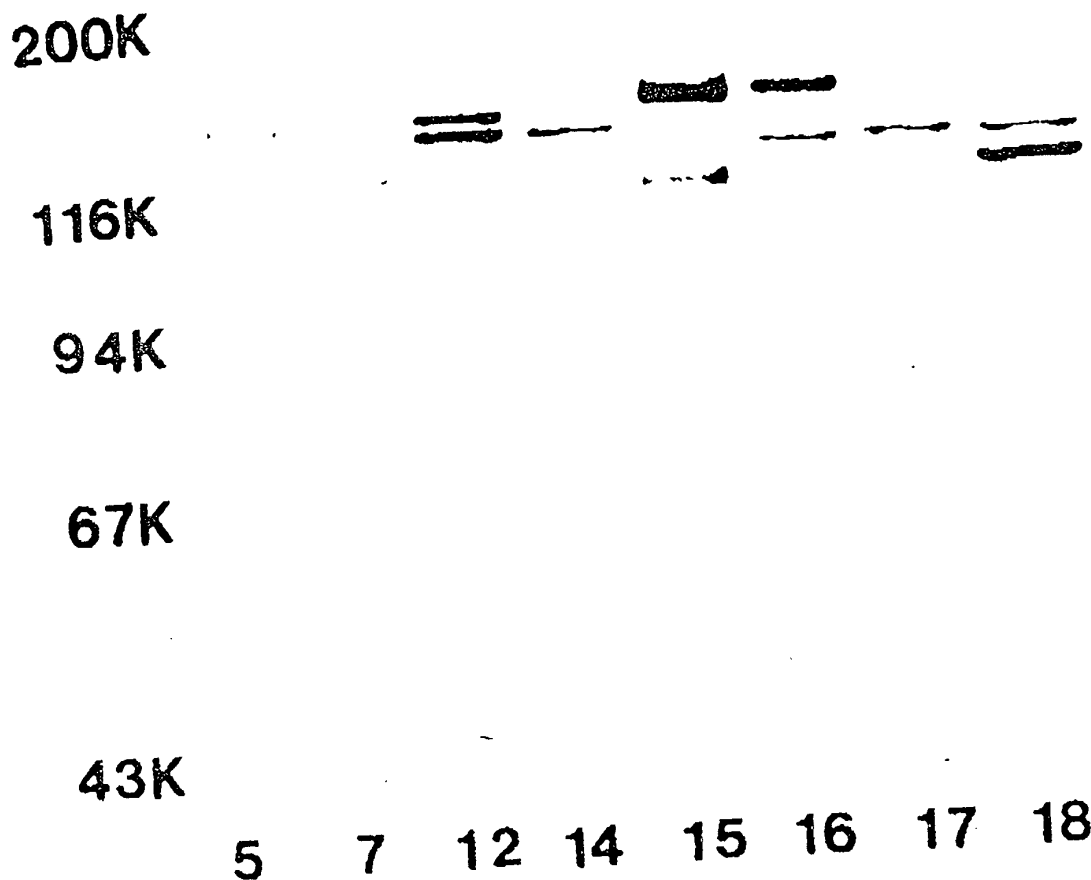


FIG. 14

WESTERN IMMUNOBLOT ASSAY OF CELL SONICATES FROM A PANEL OF EPIDEMIOLOGICALLY UNRELATED NONTYPEABLE H. INFLUENZAE STRAINS. THE SONICATES WERE PROBED WITH RABBIT ANTISERUM PREPARED AGAINST HMW1-4 RECOMBINANT PROTEIN. THE STRAIN DESIGNATIONS ARE INDICATED BY THE NUMBERS BELOW EACH LANE.

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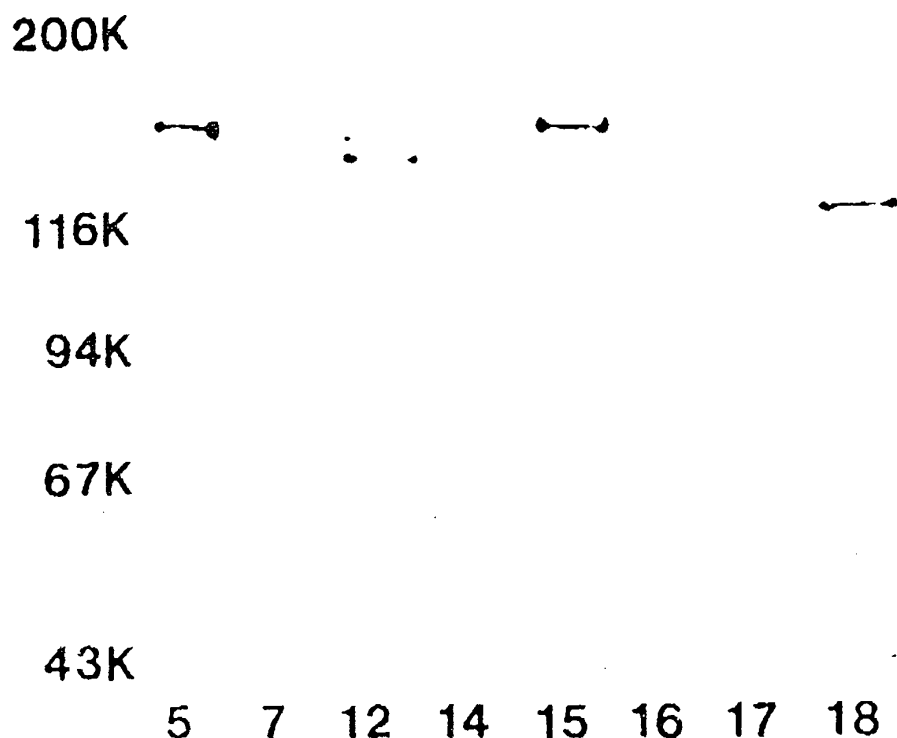
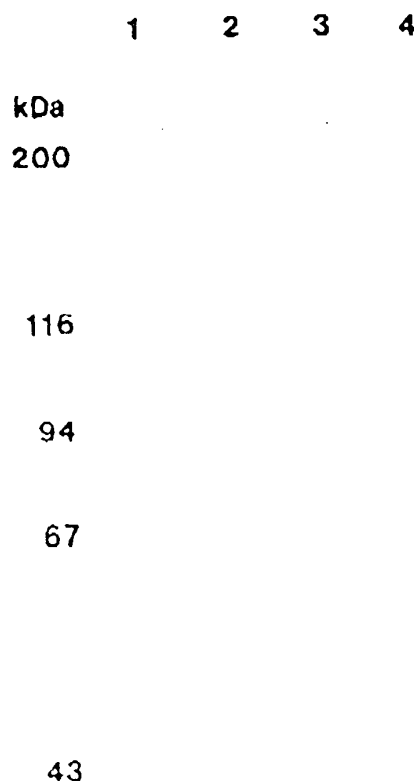


FIG. 15

WESTERN IMMUNOBLOT ASSAY OF CELL SONICATES FROM A PANEL OF EPIDEMIOLOGICALLY UNRELATED NONTYPEABLE *H. INFLUENZAE* STRAINS. THE SONICATES WERE PROBED WITH MONOCLONAL ANTIBODY X3C, A MURINE IgG ANTIBODY WHICH RECOGNIZES THE FILAMENTOUS HEMAGGLUTININ OF *B. PERTUSSIS* (13). THE STRAIN DESIGNATIONS ARE INDICATED BY THE NUMBERS BELOW EACH LANE.

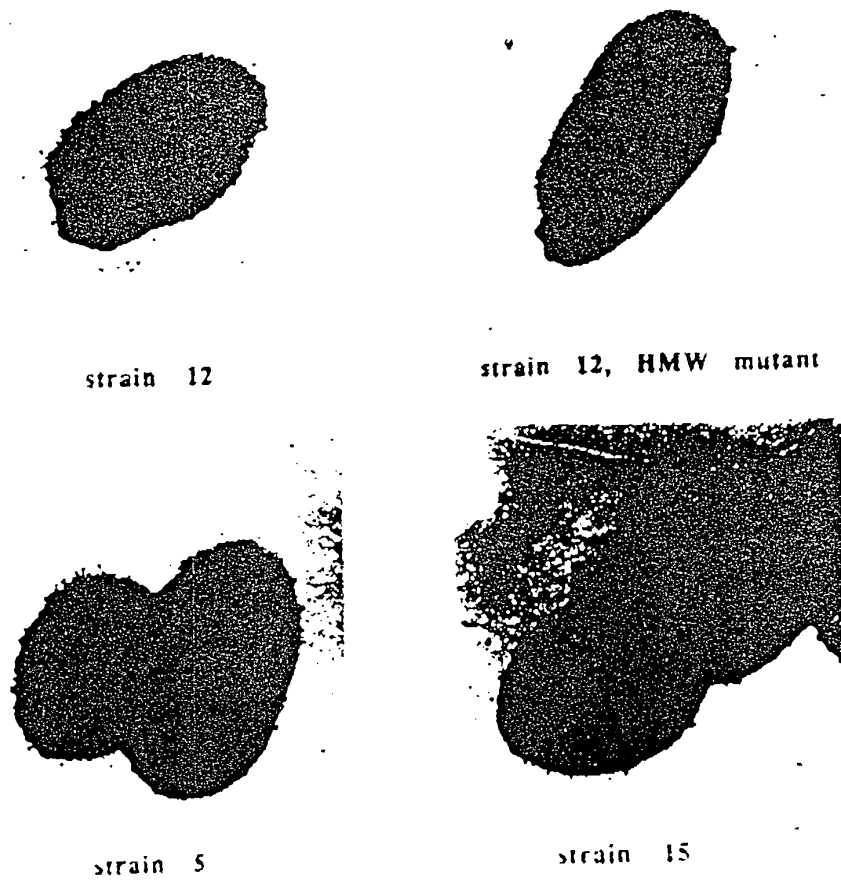
AMENDED SHEET

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**FIG. 16**

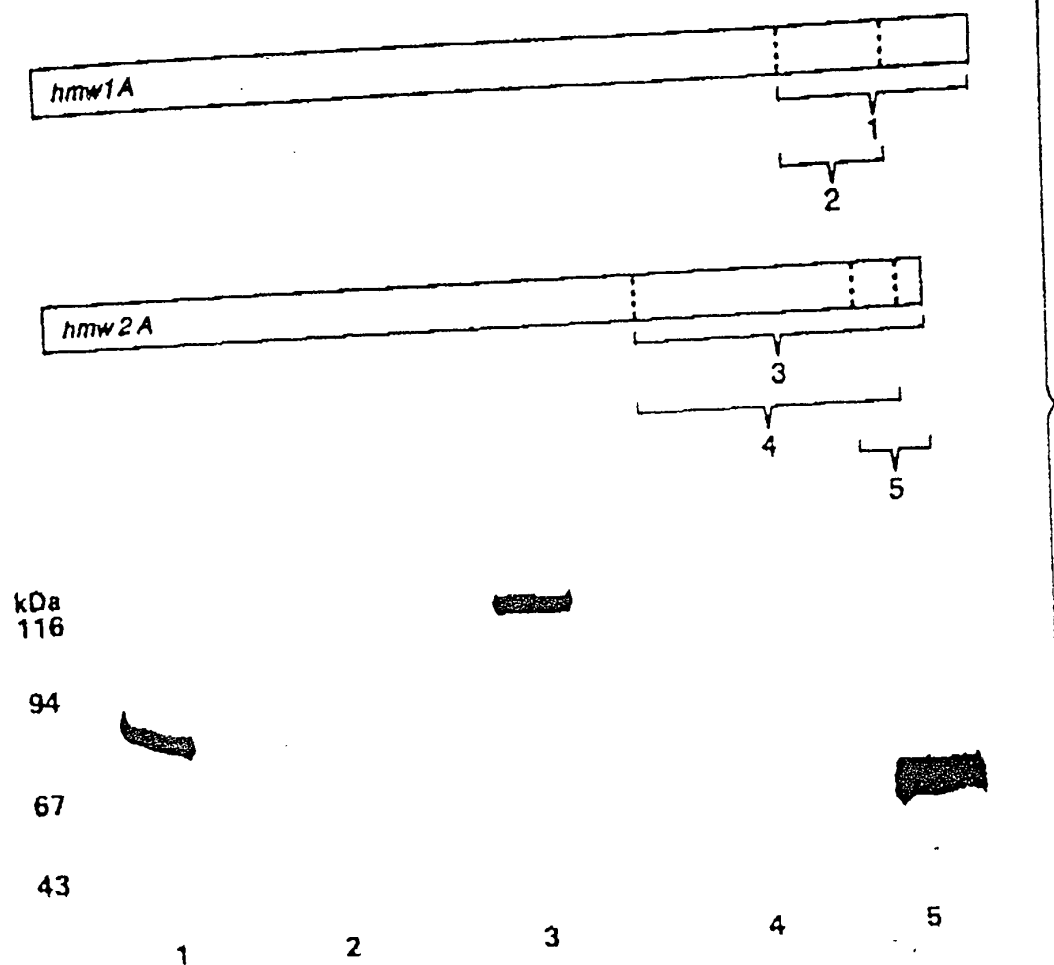
IMMUNOBLOT ASSAY OF CELL SONICATES OF NONTYPABLE *H. INFLUENZAE* STRAIN 12 DERIVATIVES. THE SONICATES WERE PROBED WITH RABBIT ANTISERUM PREPARED AGAINST HMW-1 RECOMBINANT PROTEIN. LANES: 1, WILD-TYPE STRAIN; 2, HMW-2⁻ MUTANT; 3, HMW-1⁻ MUTANT; 4, HMW-1⁻ / HMW-2⁻ DOUBLE MUTANT.

AMENDED SHEET



IMMUNOELECTRON MICROSCOPY WITH Mab AD6

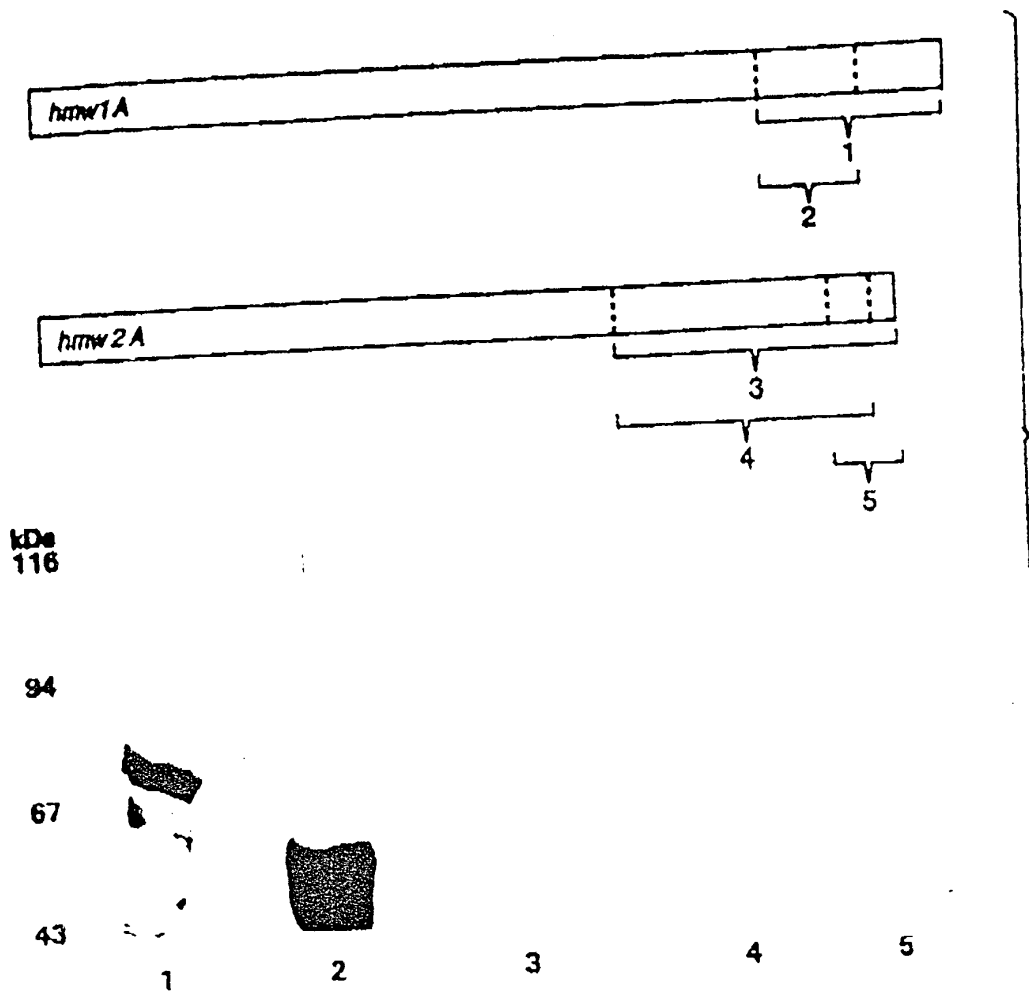
FIG.20



WESTERN IMMUNOBLOT ASSAY WITH Mab AD6 AND
HMW1A OR HMW2A RECOMBINANT PROTEINS

FIG.21

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WESTERN IMMUNOBLOT ASSAY WITH Mab 10C5 AND HMW1A OR HMW2A RECOMBINANT PROTEINS

FIG.22

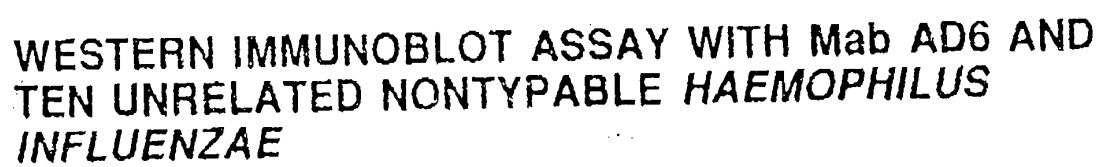


FIG.23